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RURAL AND URBAN HEALTH

A COMPARISON OF PHYSICAL DEFECTS IN UNIVERSITY STUDENTS FROM RURAL AND URBAN DISTRICTS *

W. P. SHEPARD, M.D.
AND
H. S. DIEHL, M.D.
MINNEAPOLIS

Wood,[1] after studying the results of the examinations of more than half a million school children, concluded that physical defects are greater in rural than in urban children. Dresslar,[2] in 1912, made a survey of 1,500 country schools and reported that 60 per cent. had insufficient light, 66 per cent. had unsafe water, 50 per cent. used common drinking cups, and only 1 per cent. had sanitary toilets. Since 1910 in New York State the rural death rate has exceeded the urban rate. Draper,[3] of the U. S. Public Health Service, says: "It is a well known fact that the natural advantages which the rural districts possess in favor of healthful existence are more than offset by the better health protection afforded the city dweller. . . . Malaria and hookworm are almost entirely of rural origin and there is much more typhoid and dysentery in the country than in the cities. . . . Tuberculosis is surprisingly prevalent in rural districts."

In spite of these statements, the census reports [4] continue to show a higher urban than rural death rate in the registration area. From 1909 to 1920, the urban death rate from all causes per thousand of population ranged from 15.4 to 14.1, while the rural rate varied from 13.4 to 11.9. The Provost Marshal General reported in 1918 that 21.68 per cent. of all recruits from the cities were rejected, while only 16.89 per cent. from the country were rejected.[5] From this he concludes that "a considerable physical advantage accrues to the boy reared in the country." Love and Davenport,[6] in an exhaustive study of defects found in drafted men, report a "defect rate" of 609 per thousand for urban registrants and 528 per thousand for rurals, and about 15 per cent. more defects in recruits from selected cities than in those from rural districts. They further state that men from the cities showed an excess of flatfoot, underweight, otitis media, refractive errors, goiter, pulmonary tuberculosis, dental defects and syphilis, while the rural group showed an excess of mental deficiency, deformed extremities, blindness, arthritis, ankylosis and gonorrhea. They summarize by stating that the urban registrants exceed in defects due to inferior stock and poor environmental conditions, while the rural registrants exceed in hereditary and congenital defects due to inbreeding and in accidental injuries. In a final report, Surgeon General Ireland [7] states that there were 23 per cent. of rejections among men from cities, and 20 per cent. among men from the country and small towns.

In the foregoing reports there has not been a standard basis for the classification of rural and urban residents. The census bureau since 1910 has classified all places under 10,000 population as rural, and all above 10,000 as urban. In the Provost Marshal General's report, urban figures were based on the records from certain selected large cities, and rural figures on records from 100 selected regions with boards having less than 1,200 registrants and distributed through all states. Love and Davenport classed all municipalities of 25,000 or more as urban, and all smaller places as rural. Ireland's classification was not given, but it presumably agrees with that of Love and Davenport. While any classification of this kind must be arbitrary, from the standpoint of observation and experience all the foregoing methods leave much to be desired. The living conditions of people on farms present a different sanitary, economic and social aspect from those of people living in villages; these in turn differ from those of people in small towns; and finally there is a difference between the hygienic conditions found in small cities and in large cities.

With these points in mind, the physical examination records of 3,478 male students of the University of Minnesota were selected for study. This number is made up of students who entered the university in the fall of 1922 and the fall of 1923. These records were classified according to the size of the place in which the student held longest residence. This might or might not have been his birthplace or latest residence.

METHODS

Examinations.—At the University of Minnesota, all new students are required to have a complete physical examination as part of their registration. The purpose of this examination, like other school examinations, is to detect any and all variations from normal, particular attention being paid to correctable defects. In this respect the purpose differs from army examinations, which are primarily intended to determine fitness for military service.

* From the Students' Health Service and Department of Preventive Medicine and Public Health, University of Minnesota Medical School.

1. Wood, T. D.: Health Essentials for Rural School Children, Ed. 2, Chicago, American Medical Association, 1921.
2. Dresslar, F. B.: The Hygiene of Rural Schools, N. E. A. Proc., 1912, p. 1103.
3. Draper, W. F.: Fundamentals of Rural Health Work, Pub. Health Rep. **38**: 2715 (Nov. 16) 1923.
4. Mortality Statistics, U. S. Census Bureau, Washington, Government Printing Office, 1909-1920.
5. Second Report of the Provost Marshal General, Washington, Government Printing Office, 1919, p. 159.
6. Love, A. G., and Davenport, C. B.: Defects Found in Drafted Men, Washington, Government Printing Office, 1920, p. 51.
7. Ireland, M. W.: Physical Defects Discovered in Selective Draft Men During the World War, J. A. M. A. **79**: 1579 (Nov. 4) 1922.

All parts of the examination of male students are performed by regular members of the health service staff, extra help being used only for clerical work. In the two years covered by this study, the examining personnel was practically identical. Each examiner looked for defects only in the field in which he was especially trained.

Residence Grouping.—The inadequacy of the census and draft classifications of rural and urban residents has been mentioned. In this study the following five groups were considered:

1. Rural: Hygienic and social conditions on farms vary considerably, depending on the standards of living of the farmer. Medical attention is usually available when needed, since the farmer who is prosperous enough to send his child to college probably would not hesitate to call a physician for serious illness in his family. Except for emergency visits by epidemiologists from the state board of health, communicable disease control is wholly dependent on a voluntary or appointed part-time local health officer, working usually without assistance and without funds. Practically nothing is done toward school health work, and public health education is conspicuously lacking. The migration of the less physically fit to villages, towns and cities is probably of little importance in this study, because of the classification by childhood residence. In this group there were 358 students, 99 per cent. of whom came from Minnesota.

2. Villages: In villages of from 50 to 1,000 inhabitants, much the same conditions exists as on the farms; but, in addition, there is the disadvantage of closer association. A type of poverty is often found which differs from the acute poverty seen in cities in that it is an ever-present condition, enough money usually being available to provide only for the bare necessities. Physicians must frequently be called from distant towns, or the patients removed to hospitals at considerable expense. In spite of the recent advent of the consolidated school with its better environmental conditions, school nurses and school physicians are rare, and little is done toward the teaching of hygiene or the supervision of health in the preschool age. This group included 299 students from 158 villages, of which 103 were in Minnesota. Eighty-one per cent. of these students came from Minnesota villages.

3. Towns: In towns of from 1,000 to 5,000 there is a larger amount of contact than in villages; the same "neighborliness" as in villages; considerably more financial ease; medical service is readily available for the well-to-do, and physicians are willing to care for the poor of the town with a minimal fee. Small but efficient hospitals are often available; good schools are the rule, and within the last five years an occasional school or county nurse has made her appearance; municipal water supplies are usually good; some sewer systems have been installed; and occasional attempts toward public health education have been made by members of the various campaign committees. On the other hand, milk supplies for the most part are unsupervised, and health officers lack financial support. This group included 605 students from 202 towns. Seventy-nine per cent. of this number came from 116 Minnesota towns, and 21 per cent. from eighty-six towns outside the state.

4. Small Cities: In small cities of from 5,000 to 50,000, most of the disadvantages of urban life are encountered. There is some overcrowding and some acute poverty; certain districts have poor sanitation, though university students would rarely come from such districts; adequate medical service and hospitals are available, but there are practically no charity hospitals or clinics; good schools are the rule, but medical supervision is minimal; health departments are usually weak, although a little money is frequently set aside for public health purposes; water supplies are fairly satisfactory; in most of these cities, some attention recently has been given to milk supplies; but the public is generally ignorant of health matters. In Minnesota, this group is largely one of towns which have grown rapidly within the last twenty years and in many respects are still overgrown country towns, not yet able to meet adequately the new public health problems thrust on them. There were 379 students in this group, of whom 65 per cent. were from twenty-five small cities in Minnesota, while 35 per cent. were from eighty-three small cities outside the state.

5. Large Cities: This group is made up of cities of more than 50,000 population. In Minnesota, it includes

TABLE 1.—*Number and Percentage of Certain Defects in Three Thousand Four Hundred and Seventy-Eight University Men in Various Residence Groups* *

	Rural; Men, 358		Villages, 50-1,000; Men, 299		Towns, 1,000-5,000; Men, 605		Small Cities, 5,000-50,000; Men, 379		Cities Over 50,000; Men, 1,837		Total: Men, 3,478	
	Number	Per Cent.	Number	Per Cent.	Number	Per Cent.	Number	Per Cent.	Number	Per Cent.	Number	Per Cent.
Visual defects	26	7.3	34	11.4	66	10.9	48	12.7	264	14.4	438	12.6
Pathologic tonsils	84	23.5	108	36.1	142	23.6	88	23.2	361	19.6	784	22.5
Nasal obstruction	11	3.7	21	0.7	28	4.7	21	5.5	101	5.5	182	5.2
Deafness	45	12.6	49	16.4	38	6.3	36	9.5	98	5.3	266	7.6
Goiter	22	6.2	23	7.7	44	7.3	35	9.3	147	8.0	271	7.8
Cardiac murmurs	44	12.3	40	13.4	69	11.4	37	9.8	193	10.5	383	11.0
Poor reaction to exercise	111	31.0	156	52.2	242	40.0	164	43.3	636	34.6	1,309	37.6
Albuminuria	29	8.1	32	10.7	47	7.8	30	7.9	157	8.4	295	8.5
Hypertension	35	9.8	25	8.4	36	6.0	21	5.5	84	4.6	201	5.8
Overweight	44	12.3	45	15.0	62	10.2	58	15.3	135	7.3	344	9.9
Underweight	90	25.2	86	28.8	149	24.6	137	36.1	269	14.6	731	21.3
Low vital capacity	30	8.4	21	7.0	36	6.0	31	8.2	217	11.8	335	9.7
Pulmonary abnormalities	24	6.7	17	5.7	34	5.6	23	6.1	122	6.6	220	6.3
Dental defects	238	66.5	242	81.0	328	54.2	257	67.8	1,055	57.3	2,130	60.9
Hernias	21	5.8	22	7.4	27	4.5	22	5.8	104	5.7	196	5.7
Orthopedic defects	100	28.0	92	30.8	140	23.2	88	23.2	275	14.9	695	20.0
Abnormalities of vertebral column	161	45.0	185	61.9	221	36.5	161	42.5	562	30.5	1,290	37.1
Unvaccinated	122	34.1	124	41.5	117	19.4	95	25.1	318	17.3	776	22.3
Total	1,237	346.5	1,322	442.1	1,827	302.2	1,352	356.8	5,098	276.9	10,836	311.8
Class B	79	22.1	71	23.8	132	21.8	78	20.6	379	20.6	739	21.2
Class C	35	9.8	21	7.0	33	5.5	25	6.6	153	8.4	267	7.7

* Population is based on 1920 census.

towns, and 21 per cent. from eighty-six towns outside the state.

4. Small Cities: In small cities of from 5,000 to 50,000, most of the disadvantages of urban life are encountered. There is some overcrowding and some acute poverty; certain districts have poor sanitation, though university students would rarely come from such districts; adequate medical service and hospitals are available, but there are practically no charity hospitals or clinics; good schools are the rule, but medical supervision is minimal; health departments are usually weak, although a little money is frequently set aside for public health purposes; water supplies are fairly satisfactory; in most of these cities, some attention recently has been given to milk supplies; but the public is generally ignorant of health matters. In Minnesota, this group is largely one of towns which have grown rapidly within the last twenty years and in many respects are still overgrown country towns, not yet able to meet adequately the new public health problems thrust on them. There were 379 students in this group, of whom 65 per cent. were from twenty-five small cities in Minnesota, while 35 per cent. were from eighty-three small cities outside the state.

5. Large Cities: This group is made up of cities of more than 50,000 population. In Minnesota, it includes

only Minneapolis, St. Paul and Duluth, and corresponds to the group designated by Love and Davenport as urban, there being in this state no cities between 25,000 and 50,000 population. The 1,837 students in this group came from three cities in Minnesota and forty-nine cities outside the state. Ninety-five per cent of these students were from Minnesota, and 5 per cent. from outside the state.

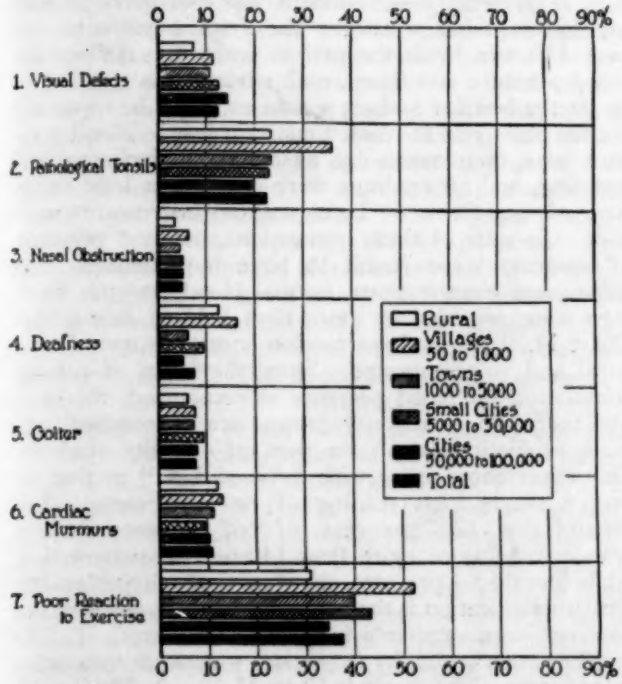

Chart I.—Relation of physical defects to size of home community in 3,478 university students.

RESULTS

The common physical defects found in the 3,478 men examined are displayed in Table 1. This shows the number of students, totals and per cent. of incidence in each of the residence groups. Charts I, II and III illustrate Table 1.

1. *Visual Defects.*—Students with a visual acuity of 20/25 or less as determined by means of the Snellen test type were listed as having visual defects. Those students with glasses but whose glasses failed to afford a proper correction are included. Chart I, 1 shows visual defects in 14.4 per cent. of students from cities, in 7.3 per cent. of students from the country, with an average of 12.6 per cent. for the entire group. Wood [7] reports visual defects in 13.4 per cent. of urban and 21 per cent. of rural school children, but makes no statement as to correction with glasses.

2. *Pathologic Tonsils.*—This group includes only those in whom, in the opinion of the throat specialist, a probable pathologic condition of the tonsils was demonstrable. The total of 22.5 per cent. is comparable to Meylan's [8] finding of 19.2 per cent. in 500 students. The occurrence of this defect, as shown in Chart I, 2, is surprisingly uniform in the various groups except for an increase among students from villages.

3. *Nasal Obstruction.*—This condition was listed only when there was marked deviation of the nasal septum, spur formation, or hypertrophy of the turbinates nearly or totally occluding the air passages. This condition apparently occurs a little more frequently in the village group. The fact that adenoids causing nasal obstruction may be an etiologic factor in the later development of deviated septums has been pointed out by Lack,[9] Kyle [10] and Gleason.[11] Since adenoids are most apt to be neglected in villages, this may have some relation to the foregoing finding (Chart I, 3).

4. *Deafness.*—Deafness of one or both ears was recorded whenever the student failed repeatedly to hear a "three foot watch" at that distance in a quiet room. As shown in Chart I, 4, deafness is highest in students of the rural and village groups, there being more than three times as much deafness among students from villages as among students from large cities. Records from the eye, ear, nose and throat department show that obstructive deafness, including impacted cerumen, is the type mainly encountered, although there is a considerable number of perforated drums and chronic inflammatory conditions of the middle ear. Nasal obstruction and pathologic tonsils are also highest in the village group (Chart I, 3, 2). The total of 7.6 per cent., or one in every thirteen, is surprisingly high, although Meylan [8] reports 9.7 per cent. deafness in 500 Columbia students.

5. *Goiter* (Chart I, 5). Any enlargement of the thyroid was listed as goiter without attempt at classification, the student being asked to return for further examination and advice. Judging from preliminary studies being made in this department, goiter is apparently more prevalent in certain parts of this state than in others. Duluth has a goiter rate among students of 7.7 per cent. males and 27.1 per cent. females; St. Paul, a rate of 7.3 per cent. males and 23.8 per cent. females; Minneapolis, a rate of 8.5 per cent. males and 19.4 per cent. females. The total incidence of goiter of 7.8 per cent. seems high in comparison to the draft records, which gave a rate of 0.8 per cent. for Minnesota. Rejections from the army on account of goiter, however, were made only in case of exophthalmic type or inability to wear the regulation military collar.

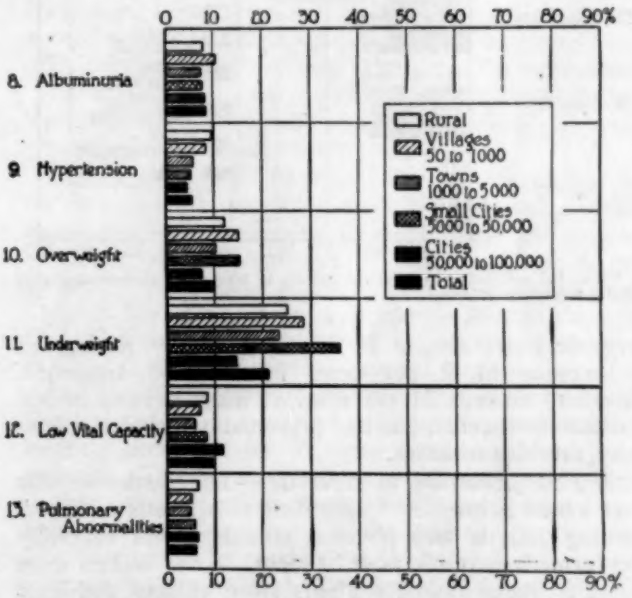

Chart II.—Relation of physical defects to size of home community in 3,478 university students.

8. Meylan, J. R., in Rapeer, Louis: Educational Hygiene, New York, Charles Scribner's Sons, 1915, p. 624.

9. Lack, H. L.: Diseases of the Nose and Accessory Sinuses, New York, Longmans, Greene & Co., 1906, p. 105.
10. Kyle, D. B.: Diseases of the Nose and Throat, Philadelphia, W. B. Saunders Company, 1904, p. 265.
11. Gleason, E. B.: Manual of Diseases of the Nose, Throat and Ear, Philadelphia, W. B. Saunders Company, 1916, p. 126.

6. *Cardiac Murmurs.*—Any murmur, enlargement or irregularity detected during the examination of the heart is noted here; hence accidental murmurs form a large part of this group. Chart I, 6 shows this finding most frequent among the rural and village groups. The total of 11 per cent. approximates the findings of Parmenter,[12] who reported "functional murmurs" in 10 per cent. of students on first examination. He is inclined to regard them as somewhat analogous to transitory albuminuria, and believes that the tendency is to exaggerate their importance. He finds that they are not harmed by athletics, being often improved, but that few students having functional murmurs become exceptional athletes. In this group, only twenty-nine cases of organic heart disease were diagnosed, 0.8 per cent., possibly because of conservatism in making diagnoses of valvular disease. Ireland[7] reports 3.1 per cent.

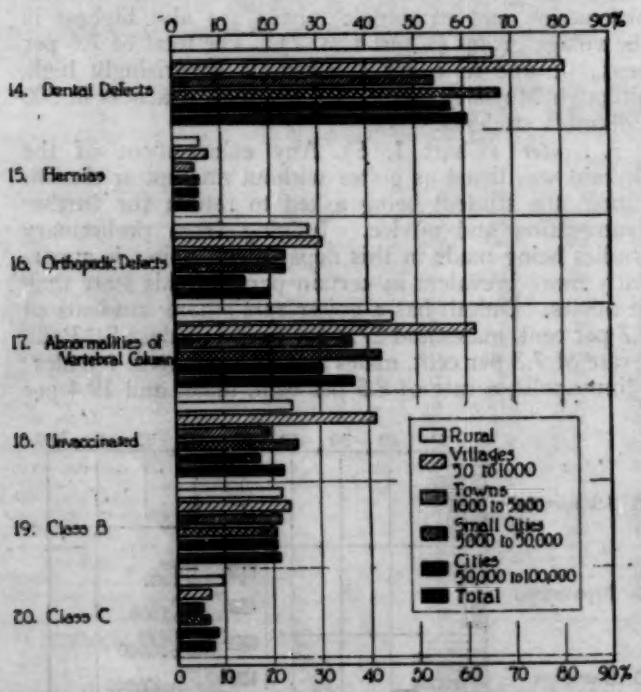
0 10 20 30 40 50 60 70 80 90%
14. Dental Defects
15. Hernias
16. Orthopedic Defects
17. Abnormalities of Vertebral Column
18. Unvaccinated
19. Class B
20. Class C
Rural
Villages 50 to 1000
Towns 1000 to 5000
Small Cities 5000 to 50,000
Cities 50,000 to 100,000
Total
0 10 20 30 40 50 60 70 80 90%

Chart III.—Relation of physical defects to size of home community in 3,478 university students.

organic heart disease in recruits. Lee[13] reports an occurrence of 2 per cent. in Harvard freshmen. Meylan[8] records 21 per cent. of heart defects in 500 Columbia students, but this presumably includes transitory rate disturbances.

7. *Poor Reaction to Exercise.*—The cardiovascular test which Schneider[14] described as a means of determining fatigue and physical efficiency was carefully performed on each male student. Low scores were most frequent among students from villages and least frequent among those from the country (Chart I, 7).

8. *Albuminuria.*—This finding was listed whenever the Heller ring test showed a definite cloud in the urine passed at the time of examination. It will be seen that albuminuria occurs in about 8 per cent. of each group, with the exception of the village group, in which it is found in 10.7 per cent. (Chart II, 8). An intensive study which is being made by the health service of approximately 300 cases of albuminuria is not yet completed, but findings thus far seem to agree with the Harvard reports,[15] viz., that a considerable amount of transitory albuminuria occurs in students without any evidence whatever of organic disease, but that the condition is apt to be associated with poor nutrition or neurocirculatory unbalance, and is to be looked on merely as a functional disturbance.

9. *Hypertension.*—A student was considered as having hypertension whenever the systolic pressure was over 140 mm. with the patient reclining. Before the blood pressure was taken, each student was required to lie on the bed for as long a time as might be necessary for his pulse rate to reach a constant level. Blood pressure was then taken by auscultation, reclining and standing, and all readings were checked at least twice. Recently standardized Tycos aneroid instruments were used. In spite of these precautions, nearly 6 per cent. of students were found to have hypertension. On subsequent examinations, normal blood pressure readings were recorded in more than half of this group. Chart II, 9 shows hypertension most frequent in the rural and village groups. Since the effect of psychic stimulation on blood pressure is recognized, the step-like reduction as the city groups are approached suggests sophistication on the part of the city students. Our experiences agree with those of Lee[15] in that we find a single high reading of no significance. Lee reports that 12.8 per cent. of 662 students show a systolic reading of more than 140 on one examination, while less than 1 per cent. show persistent hypertension. That sophistication is the sole cause for this observation, however, seems unlikely in view of two facts: 1. The incidence curve of hypertension somewhat resembles that of overweight shown in Chart II, 10. 2. The results of the "Schneider test"[14] designated to indicate functional disturbances of the neurocirculatory system, and believed to be a much more delicate index of psychic stimulation than the blood pressure reading, do not follow this incidence distribution (see reaction to exercise, Chart I, 7). Alvarez[16] reports that 22 per cent. of male university freshmen have blood pressures exceeding 140 mm. systolic, but he does not state what precautions were taken to remove psychic stimulation, or whether his number still presented high readings on subsequent examinations.

10. *Overweight.*—A student was reported as being overweight whenever his weight (stripped) exceeded by 10 per cent. or more the normal weight for his age and height, according to the commonly used insurance standards (Prudential rate books). The unsuitability of these tables is recognized, but to date they have been the most widely accepted standards. Chart II, 10 shows in both rural and village groups nearly double the amount of overweight that occurs in the city group.

11. *Underweight.*—This finding was listed for students 10 per cent. or more underweight according to the insurance standards (Chart II, 11). A total of 21 per cent. of all students were underweight and about 10 per cent. overweight, leaving 69 per cent. within normal limits. The small amount of underweight in the large cities is striking.

12. *Low Vital Capacity* (Chart II, 12).—Students whose lung capacities were less than 90 per cent. of

12. Parmenter, D. C.: The Occurrence and Significance of Systolic Murmurs in Healthy Individuals, J. A. M. A. **78**: 1680 (June 3) 1922.
13. Lee, R. I.: Investigative Opportunities in the Physical Examination of Large Groups of Individuals, J. Indust. Hyg. **3**: 304 (Feb.) 1922.
14. Schneider, E. C.: Cardiovascular Rating as a Measure of Physical Fatigue and Efficiency, J. A. M. A. **74**: 1501 (May 29) 1920.
15. Lee, R. I.: Blood Pressure, Urinary Findings and Blood Counts in Six Hundred and Sixty-Two Male Students, Boston M. & S. J. **173**: 541 (Oct. 7) 1915. Parmenter, D. C.: Observations on the Significance of Functional Albuminuria in Young Adults at Harvard, Boston M. & S. J. **183**: 677 (Dec. 9) 1920.
16. Alvarez, W. C.: Blood Pressures in Fifteen Thousand University Freshmen, Arch. Int. Med. **32**: 17 (July) 1923.

normal according to Dryer's[17] weight formula simplified by the table devised by Myers[18] were included under this grouping. These measurements were taken carefully with a Sanborn water spirometer, and each student was allowed at least three trials, the highest reading being recorded. Chart II, 12 shows low vital capacity much more common in city students than in any other group. It has been pointed out[19] that students giving histories of tuberculosis, pleurisy or pneumonia will average lower vital capacities than students without these histories. Histories of these diseases might account for the frequence of low vital capacity among rural students, but cannot fully explain the greatest occurrence of low vital capacity in city students, nor will overweight or malnutrition account for this. Possibly Dryer's[17] occupational classification would lend some explanation. The figures for lung defects, low vital capacity, history of tuberculosis, pleurisy and pneumonia show an interesting similarity.

13. *Pulmonary Abnormalities.*—This term covered all abnormalities encountered in any portion of the routine physical examination of the lungs, except low vital capacity. Chronic bronchitis and various types of pleurisy accounted for a large part of this group. A definite diagnosis of pulmonary tuberculosis was made by subsequent examinations in thirty-one students, a total of 0.9 per cent. Many others were kept under observation without a definite diagnosis being made. The distribution of all pulmonary abnormalities by residence (Chart II, 13) does not show a great variation, although there is a slight increase in both the rural and the city groups. The same tendency is noted in the distribution of low vital capacity (Chart II, 12). The reports of Love and Davenport showed a total incidence of 1.5 per cent. tuberculosis in registrants from Minnesota.

14. *Dental Defects.*—Defects of the teeth and gums are reported by the dental department in deegres, 1, 2, 3 and 4, 1 meaning a slight defect and 4 meaning an advanced condition. All dental defects, such as caries, malocclusion, gingival pericemental disease, impactions and poor masticating efficiency, which were of a degree greater than one were included in this series. Chart III, 14 shows a surprising frequence of these defects in general, and a marked increase in the village and rural groups.

15. *Hernias.*—This finding was recorded only when some portion of the abdominal contents actually protruded through a defect of the anterior abdominal wall. Relaxed abdominal rings are not included. Chart III, 15 shows this defect fairly constant except for an increase in men from villages and some decrease in men from small towns. The total occurrence of hernia in 5.7 per cent. of male students seems high in comparison to the army figures of 1.9 per cent. Love and Davenport give the figure for hernia plus enlarged abdominal rings as 4 per cent. Meylan reports 2.2 per cent. hernia at Columbia.

16. *Orthopedic Defects.*—This term includes all defects of the bones and joints except spinal curvature. It is largely composed of flatfoot, which was listed only when there was a definite functional impairment. The distribution shown in Chart III, 16 is interesting in that it shows twice as many of these defects in the village group as in the city group. This is in accord with the findings of Galloway[20] in British soldiers. He states that men engaged in arable land and dairy farming are not a good type of recruit, since many of them suffer from bad feet and rheumatism. Love and Davenport,[6] on the other hand, report an excess of flatfoot among urban recruits.

17. *Abnormalities of Vertebral Column.*—In this classification are included students with two or more types of spinal curvature, most of them representing mild postural defects. As pointed out by the Harvard studies, defects of posture are exceedingly common in students, result in poor bodily mechanics, and may have much to do with the student's health. Brown[21] reports that only 1 per cent. of Harvard freshmen have perfect bodily mechanics, 22.5 per cent. are classed fair, and nearly 75 per cent. are extremely poor. This defect predominates in students from villages and is least frequent in students from cities (Chart III, 17).

18. *Unvaccinated.*—This condition was recorded only when the student had never been vaccinated for smallpox and had never had smallpox. While some may object to listing this as a physical defect, it must be regarded as such from the health service standpoint, since students unprotected against smallpox are a potential menace to student health, and constitute a group requiring special attention in the event of a smallpox outbreak. In this study, it forms an interesting indication of education along public health lines. The compulsory vaccination law in this state was repealed in 1903. For the last few years, therefore, the university has been receiving increasing proportions of unvaccinated students. Chart III, 18 shows a marked predominance of unprotected students among rural and village groups, there being nearly twice as many from the villages needing vaccination as from the large cities.

19. *Venereal Diseases.*—These were carefully looked for in this series, with the result that two cases of acute gonorrhea were discovered.

Classification for Athletics.—On the completion of the examination, students are classified into Groups A, B, C and D, according to their fitness for various forms of physical exercise. Those in Class A are allowed to participate in any form of athletics; those in Class B are excluded from strenuous sports; those in Class C are allowed only supervised exercise, and those in Class D are permitted no physical exercise.

In Class B are students who presented some moderate physical defect or group of defects which necessitated limiting their activity to some extent, at least temporarily. Twenty-one per cent. of all men were placed in this class. Most of these would have been rejected from the army or placed in the limited service class. The distribution by residence is fairly level, with a slight increase in the rural and village groups (Chart III, 19).

The students in Class C presented some major organic defect, and were exluded from all athletics and from military drill. The increase in the rural group (Chart III, 20) is surprising. The high percentage of major defectives in the urban group may be accounted for by the fact that many students from Minneapolis and St. Paul, with severe physical handicaps, are able to attend the university and still live at home. The sum of Class B and Class C men is 1,006 out of 3,478,

17. Dryer, Georges; and Hanson, J. F.: The Assessment of Physical Fitness, New York, Paul C. Hoeber, 1921.
18. Myers, J. A.: Studies on the Respiratory Organs in Health and Disease, Am. Rev. Tuberc. 7: 161 (May) 1923.
19. Shepard, W. P.: The Effect of Certain Past Diseases on Vital Capacity, Arch. Int. Med. 33: 185 (Feb.) 1924.
20. Galloway, James: The War Physical Census, Brit. M. J. 2: 381 (Sept. 11) 1920.
21. Brown, L. T.: A Combined Medical and Postural Examination of Seven Hundred and Forty-Six Young Adults, Am. J. Orthop. Surg. 15: 774 (Nov.) 1917.

or 28.9 per cent., a figure surprisingly close to the draft rejections plus the limited service men, 29.59 per cent.

SUMMARY

1. *Occurrence of Multiple Defects and No Defects.*—Table 2 and Chart IV show that most students with but one or two defects come from towns and cities, those with three defects are of about a level distribution except for the increase in the village group, while those with four or more defects are much more common in the rural and village students. Only 14 per cent. of the students had but one defect, while 35 per cent. had four or more defects.

TABLE 2.—*Distribution of Multiple Defects by Residence Groups in Three Thousand Four Hundred and Seventy-Eight Men*

Occurrence of Defects	Rural: Men, 358; per Cent.	Villages 50-1,000: Men, 290; per Cent.	Towns 1,000-5,000: Men, 605; per Cent.	Small Cities 5,000-50,000: Men, 379; per Cent.	Cities Over 50,000: Men, 1,837; per Cent.	Total, 3,478; per Cent.
No defects	3.6	3.7	8.7	4.3	4.4	5.2
One defect only	8.2	8.7	15.5	14.0	15.9	14.0
Two defects only	14.4	14.7	23.5	22.3	22.0	20.2
Three defects only	23.6	32.6	22.4	25.9	25.9	25.6
Four or more defects	49.7	39.9	29.7	33.7	31.7	34.9
Total	99.5	99.5	99.8	100.2	99.9	99.9

Students having no defects (Chart IV, 1) are of about an equal distribution except for the town group, in which the percentage of students who are entirely free from physical defects is twice as large as in any other group. Only 5 per cent. of all students are free from defects.

2. *Residence Groups Highest and Lowest in Defects.*—A summary of the figures for defects shows the following:

Students from rural communities show most hypertension, pulmonary abnormalities and Class C; least goiter, nasal obstruction and visual defects.

Students from villages show most albuminuria, deafness, dental defects, cardiac murmurs, hernias, nasal obstruction, orthopedic defects, overweight, poor reaction to exercise, pathologic tonsils, unvaccinated, abnormalities of vertebral column, and Class B; and are lowest in none.

Students from towns are highest in none; lowest in albuminuria, dental defects, hernias, pulmonary abnormalities, low vital capacity and Class C.

Students from small cities are highest only in goiter and underweight, but are second in nasal obstruction, hernia, visual defects, poor reaction to exercise and dental defects. They are lowest in cardiac murmurs and Class B (same as large cities).

Students from large cities show most visual defects and low vital capacity; least deafness, hypertension, orthopedic defects, overweight, poor reaction to exercise, pathologic tonsils, underweight, unvaccinated, abnormalities of vertebral column and Class B.

The totals of percentages in Table 1, which give a comparative figure of the frequence of defects, show village students first in defects, with 442.1, small cities second with 356.8, rurals third with 346.5, towns fourth with 303.2, and large cities fifth with 276.9. It should be noted that these totals of percentages tend to magnify the difference between the groups and do not indicate a defect rate. While village students lead in nearly all defects and rural students come third, the number of students in these two groups who show no defects whatever is not much below the city group. This would indicate that multiple defects are more common in village and rural students. That such is actually the case is shown in Chart IV.

3. *Totals of Defects.*—The total incidence of the various defects is shown in the last column of Table 1. Dental defects lead all others by a wide margin. Spinal curvature of marked degree is extremely common. More than one student in every five has pathologic tonsils. More than 20 per cent. are unprotected against smallpox. One in five shows flatfoot or other orthopedic defect serious enough to produce functional impairment. One in eight lacks correction for impaired vision. Enlargement of the thyroid occurs in one out of twelve males in this locality. Deafness occurs in 7.6 per cent.

4. *Totals of Defectives.*—About one student in twelve (7.7 per cent.) has some organic defect sufficiently serious to prohibit all athletics and military drill (Class C). On first examination, 21.2 per cent. appear to have defects that make strenuous athletics inadvisable (Class B). A total of 28.9 per cent. have organic defects (Classes B and C) serious enough to limit their activity.

COMMENT

We therefore find that university students who have been raised in villages and on farms show more physical defects and more multiple defects than those raised in large cities. The defects most frequent among rural students are not particularly suggestive of any common cause.

The nature of the defects most frequent among students from villages suggest such possible common causes as neglect, congenital anomalies, poor development, frequent exposure to infection, poor hygiene, and lack of school health supervision.

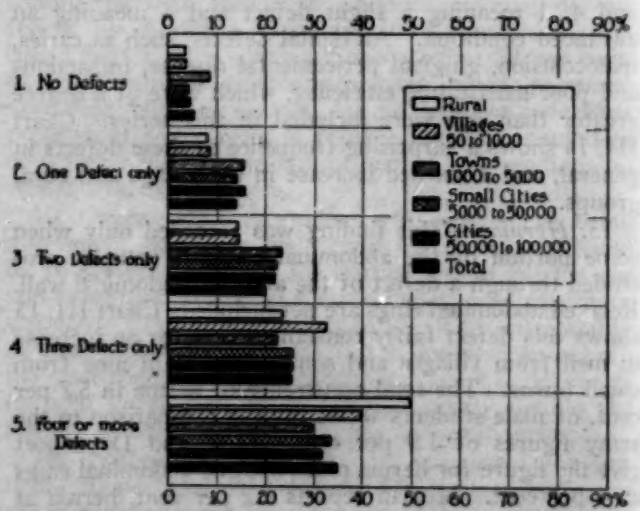
0 10 20 30 40 50 60 70 80 90%
1 No Defects
2 One Defect only
3 Two Defects only
4 Three Defects only
5 Four or more Defects
Rural
Villages 50 to 1000
Towns 1000 to 5000
Small Cities 5000 to 50000
Cities 50000 to 100,000
Total

Chart IV.—Relation of multiple defects to size of home community in 3,478 university students.

The low incidence of physical defects among students from towns of from 1,000 to 5,000 population possibly may be accounted for by relatively better sanitation, medical service and economic conditions than are found in smaller places without the attending greater exposure to health hazards encountered in cities.

The frequent occurrence of physical defects among students from small cities might, in part, be due to the fact that here the disadvantages of city life are rarely

compensated for by adequate health protection and by medical supervision of children of school and preschool age.

The fact that, in spite of the disadvantages of urban life, students from large cities are lowest in physical defects speaks well for the standards of living and the present-day health practices in our cities.

In making comparison between this study and the results of the draft examinations, several factors must be considered. In the first place, neither in the draft reports nor in this study is the difference between the number of physical defects or urban and rural people great. The army classification of urban and rural residents, like the census classification, has a leveling effect. Thus, persons from farms and villages where defects are high are grouped with those from towns where defects are low, and those from large cities where defects are low are grouped with those from small cities where defects are higher. Secondly, this study represents a selected group in comparison to draft and census reports, although the proportion of defectives in this series was nearly equal to those in the draft. Thirdly, the standards of examination in this study were much more constant than in the draft examinations.

From the figures presented in this study, it would appear probable that funds expended in community health work are paying proportional dividends. If this is true, there is undoubtedly a great need for extending organized public health work beyond large cities, and this need is especially acute in villages. The small cities apparently are paying the penalty for negligence in health work, formerly paid by the large cities. While the towns and large cities are obtaining tangible results, there is still room for great improvement when nearly 30 per cent. of young adults of a selected class show organic defects serious enough to limit their activity.

CONCLUSIONS

When examined for the purpose of detecting departures from normal, students entering the University of Minnesota show the following:

1. Students raised in villages of from fifty to 1,000 population have more physical defects than students raised in other communities. Multiple defects are also common in this group.

2. Students raised on farms show more physical defects than those raised in towns or large cities, about the same number as those from small cities and less than those raised in villages.

3. Students raised in towns of from 1,000 to 5,000 population show less physical defects than any others except those from large cities.

4. Students raised in small cities of from 5,000 to 50,000 population are exceeded in total physical defects only by students from villages.

5. Students raised in cities of more than 50,000 population show the lowest number of physical defects.

Definition of Pathologist.—The pathologist may then be defined as the one who comes in direct contact with the diseased, living and dead body in its natural environment, who attempts to trace the sequence of phenomena both without and within the body which lead to disease, dissolution and recovery. This definition is not to imply that important discoveries in the causation of disease may not be made by men not trained as pathologists. In research, however, they must put themselves in touch with diseased individuals as did Pasteur in studying pébrine.—Theobald Smith: *Edinburgh M. J* **31**:224 (April) 1924.

ECZEMATOID RINGWORM *

H. H. HAZEN, M.D.
WASHINGTON, D. C.

Probably the best accounts of the early history of fungous infections may be found in the classical works of Kaposi [1] and Plaut.[2] Favus was recognized by the Arabian school of physicians, and by the practitioners of the Middle Ages. At the time of Willan and Bateman,[3] and even up to the appearance of Cazanave's [4] book, the common types of ringworm were called by so many names, and were so confused with other diseases, that it is extremely difficult to draw any safe deductions from the writings of this period.

RESEARCH IN ETIOLOGY OF RINGWORM

In 1835, the first scientific discovery of fungi as a cause of disease was made by Balsamo,[5] and Bassi,[6] who found that muscardin, a contagious disease of silkworms, was due to a fungus. This resulted in much work among physicians, and in 1839 Schönlein [7] recognized the cause of favus. In 1843, Gruby [8] discovered the organism causing tinea tonsurans, and for the next few years the causes of various other parasitic skin diseases were found. The next really important work was that of Sabouraud,[9] in 1894, who differentiated numerous varieties by means of special culture mediums.

The first cases of ringworm of the hands and feet were described by Pellizari [10] in 1888, and Mouktar,[11] in 1892. Whitfield,[12] who had apparently overlooked these contributions, described cases occurring in England in 1908, and again in 1911. Sabouraud [13] published his first article on the subject in 1910, and followed this with an important article in 1912.

Montgomery and Culver [14] described the disease in America in 1914, and Hartzell [15] in 1915. However, it was the excellent work of Ormsby and Mitchell,[16] in 1916, that really called the attention of American dermatologists to the prevalence and importance of the disease. Since that time, important work has been done by White,[17] Wende and Collins,[18] Williams [19] and various other observers.[20]

BOTANIC POSITION AND CLASSIFICATION

While such an authority as Plaut states that the exact botanic position of these organisms is still undetermined, yet, in a general way, it is known that they belong to

* Read before the Section on Preventive and Industrial Medicine and Public Health at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June, 1924.

1. Kaposi, in Hebra: Diseases of the Skin, New Sydenham Society **5**: 113, 1880.
2. Plaut, in Mracek: Handbuch der Hautkrankheiten, Vienna, **4**, Second Half, p. 1, 1909.
3. Willan: Delineations of Cutaneous Diseases, completed by Bateman, London, 1817.
4. Cazenave: Leçons sur les maladies de la peau, Paris, 1845.
5. Balsamo: Gazette de Milan, 1835.
6. Bassi: Del mal del segno, calinaccio o moscardino, 1837.
7. Schönlein: Arch. f. Anat. u. Physiol. (Müller's) **82**, 1839.
8. Gruby: Compt. rend. Acad. d. sc. **15**: 512, 1842; **17**: 311, 1843; **18**: 583, 1844.
9. Sabouraud: Les tricophyties humaines, Paris, 1894; Les teignes, Paris **3**, 1910.
10. Pellizari: Gior. ital. d. mal. ven. **23**, 1888.
11. Mouktar: Ann. de dermat. et syph., 1892, p. 894.
12. Whitfield: Lancet, July 25, 1908; Brit. J. Dermat. **23**: 35, 1911.
13. Sabouraud: Ann. de dermat. et syph. **1**: 289, 1910; Arch. f. Dermat. u. Syph. **113**: 923, 1912.
14. Montgomery, D. W., and Culver, G. D.: Eczema Marginatum of the Toes, J. A. M. A. **62**: 1076 (April 4) 1914.
15. Hartzell: Am. J. M. Sc. **149**: 96, 1915.
16. Ormsby, O. S., and Mitchell, J. H.: Ringworm of Hands and Feet, J. A. M. A. **67**: 711 (Sept. 2) 1916.
17. White, C. J.: J. Cutan. Dis. **37**: 501 (Aug.) 1919.
18. Wende, G. W., and Collins, K. R.: Epidermophyton Inguinale, Arch. Dermat. & Syph. **3**: 1 (Jan.) 1921.
19. Williams, C. M.: Diagnosis of Some Eruptions on Hands and Feet, Arch. Dermat. & Syph. **5**: 161 (Feb.) 1922.
20. Lane, J. E.: Boston M. & S. J. **174**: 271 (Feb. 24) 1916. Mitchell, J. H.: Further Studies on Ringworm of Hands and Feet, Arch. Dermat. & Syph. **5**: 174 (Feb.) 1922.

Hyphomycetes, which is one of the classes of *Thallophytes.* Four main varities of organisms are recognized; *Achorion, Microsporon, Trichophyton* and *Epidermophyton.* For his original classification, Sabouraud depended on the morphology of the organisms, their relation to the hairshafts, and the reaction of the mycelia to the disintegrating action of potassium hydroxid. At the present time, the cultural characteristics are used to describe the different varieties.

CULTURAL CHARACTERISTICS

As is well known, Sabouraud's mediums depended largely on crude maltose (Chanut) and granulated peptone (Chassaing). The mediums even had to be filtered through a special filter paper. On such mediums each variety would grow in a characteristic way, although apparently a slight change in the medium would result in the growth assuming a totally different appearance. Owing to the difficulty in obtaining the French peptone and maltose, comparatively little culture work was done in America. Hodges,[21] in 1921, reported that satisfactory American sugars could be obtained, and that they should be tested by the polariscope. He recommended American dextrose (technical) and Digestive Ferments Company peptone. Hopkins and Iwamoto[22] report that *d*-mannite, *d*-mannose, *d*-glucose and *d*-fructose are utilized by a process of acid fermentation. They have also made other important observations. Special flasks are frequently employed, but a pint whisky flask, or a Petri dish can be employed. It is usually believed almost useless to implant tissue on mediums unless the presence of the organisms has been microscopically demonstrated. This is an important point to note, and will be referred to subsequently. The majority of authors agree that it is not necessary to treat the tissue with alcohol before implanting it, but apparently the drying of tissue for two or three days before planting will lessen the chances of bacterial infection. The papers of Farley[23] and Mitchell[20] may be consulted for further details.

TABLE 1.—*Causal Organisms in Thirty-One Cases*

	Number of Cases	Percentage
Trichophyton interdigitale (Priestly)	7	21.9
Epidermophyton cruris	5	15.6
Trichophyton purpureum (Bangs)	3	9.4
Trichophyton violaceum	3	9.4
Trichophyton acuminatum	2	6.2
Trichophyton cerebriforme	2	6.2
Trichophyton radiolatum	2	6.2
Trichophyton faviforme-album	1	3.1
Trichophyton umbilicatum	1	3.1
Trichophyton unidentified	4	12.5
Microsporon lanosum	1	3.1

EXISTENCE OUTSIDE THE BODY

Practically nothing is known of the existence of ringworm fungi outside the body. However, the well known clinical observations that infection may occur from swimming pool runways, bath mats, towels, slippers and laundered socks suggest that the organisms thrive, or at least exist, in many places outside the human body. The clinical importance and the disability caused by ringworm are apparently so considerable that methods for identifying organisms outside the human body must be discovered. As bearing on this point, Farley[24] and Dold[25] have demonstrated that ringworm fungi will resist drying for many days. It is also well known that boiling socks for ten minutes in a weak alkali solution will not destroy their infectivity. Practical methods of disinfection are urgently needed.

CAUSAL ORGANISMS

There has been a considerable amount of discussion concerning the causal organism of eczematoid ringworm. The prevailing impression is that *Epidermophyton inguinale* is the sole cause. Kaufmann-Wolf[26] obtained a white organism, certainly not *Epidermophyton inguinale* in seventeen out of twenty-five cases. Mitchell obtained *Epidermophyton* in only six out of seventeen cases. Greenwood's[27] conclusions are given in Table 1.

Williams likewise obtained *Epidermophyton* in a comparatively small number of cases. The organisms that he did obtain were: *Trichophyton lactecolor, Trichophyton violaceum, Trichophyton amethystricum, Trichophyton asteroides, Trichophyton acuminatum* and *Trichophyton plicatile.*

It is important that a broad survey of the parasitology of ringworm be made.

IMMUNITY

The experiments of Plato,[28] Truffi,[29] Bloch and Messini,[30] Bloch,[31] Bruhns and Alexander,[32] and others have shown that the immunologic processes in tinea tonsurans and deep granulomatous ringworm are similar to those of infectious processes in general. Deep ringworm may confer immunity against later attacks. Kolmer and Strickler[33] have reviewed the question of complement fixation and have done a considerable amount of experimental work proving that this reaction is positive. Amberg[34] has obtained positive cutaneous reactions in various types of ringworm. Citron[35] was unable to confer active or passive immunity on rabbits.

Vaccine treatment has been tried by numerous observers, among whom may be mentioned Strickler[36] and Lavinder.[37] At first the reports were rather encouraging but at present the general feeling is that these reports were entirely too optimistic.

One extremely interesting fact is that tinea tonsurans clears up spontaneously with the advent of puberty. It would be interesting to know whether this is due to endocrine changes, or to an altered sebaceous output. Experimental work on this point is needed.

At present we know nothing concerning immunity or immune processes of the body against the organisms causing eczematoid ringworm. We do know that certain patients recover quickly, and that others are carriers for many years. Whether this is due to the condition

21. Hodges, R. S.: Ringworm of Nails, Arch. Dermat. & Syph. **4**: 1 (July) 1921.
22. Hopkins, J. G., and Iwamoto, K.: Fermentation Reactions of Ringworm Fungi, Arch. Dermat. & Syph. **8**: 619 (Nov.) 1923; Fermentation Reactions of Ringworm Fungi, ibid. **8**: 838 (Dec.) 1923.
23. Farley, D. L.: Cultivation of Epidermophyton Inguinale, Arch. Dermat. & Syph. **2**: 466 (Oct.) 1920.
24. Farley, D. L.: Viability of Ringworm Fungi in Dry Cutaneous Material, Arch. Dermat. & Syph. **3**: 759 (June) 1921.
25. Dold, H.: China M. J. **34**: 34 (Jan.) 1920.
26. Kaufmann-Wolf: Dermat. Ztschr. **21**: 385, 1914.
27. Greenwood, A. M.: Cultures of Parasitic Fungi, Arch. Dermat. & Syph. **8**: 81 (July) 1923.
28. Plato: Arch. f. Dermat. u. Syph. **9**: 63, 1902.
29. Truffi: Clin. med. italiana **43**: 377, 1904.
30. Bloch and Messini: Ztschr. f. Hyg. u. Infectionskr. **43**: 69, 1909.
31. Bloch: Arch. f. Dermat. u. Syph. **93**: 157, 1908.
32. Bruhns and Alexander: Dermat. Ztschr. **17**: 695, 1910.
33. Kolmer, J. A., and Strickler, Albert: Complement Fixation in Parasitic Skin Diseases, J. A. M. A. **64**: 800 (March 6) 1915.
34. Amberg: J. Exper. Med. **12**: 435, 1910.
35. Citron: Ztschr. f. Hyg. u. Infectionskr. **49**: 120, 1905.
36. Strickler, Albert: J. Cutan. Dis. **33**: 181, 1915; The Vaccine Treatment of Ringworm of the Scalp, J. A. M. A. **65**: 224 (July 17) 1915.
37. Lavinder, C. H.: Vaccines of Favus and Ringworm, J. A. M. A. **66**: 945 (March 25) 1916.

of the skin, to various other local conditions, such as heat and irritation, or to the variety of infecting organisms, is absolutely unknown, and is worthy of serious study from both the practical and the scientific standpoint.

FREQUENCY

In my own practice, between 9 and 10 per cent. of all new patients coming to the office seek relief from this disease. This by no means covers the total percentage of those affected, for ringworm of the feet is frequently discovered in the course of examination. Correspondence and personal inquiries from dermatologists throughout the United States would indicte that this is about the usual proportion of cases seen by those who are on the lookout for the disease. In the South, the percentage of cases is probably considerably higher. Certain of the physicians in this section of the country believe that every adult is affected. Apparently the disease is rather less common in the Northern Central states, but this may well be due to failure to recognize it, for it has been shown to be very common in Chicago. The condition also occurs throughout the whole of the civilized world.

CLINICAL COURSE

Satisfactory accounts of the symptomatology of eczematoid ringworm abound in the textbooks on dermatology, and in the various journals. It is generally recognized that the parts of the body most frequently affected are the interdigital spaces, soles, fingers, palms and backs of the hands. A little less frequently, lesions are encountered on the arms, legs and groins, and fairly frequently in the perineum. In the interdigital spaces, the type of lesions most frequently encountered are either fissuring or moist peeling. On the palms and soles, dry peeling and some fissures are frequently encountered. On the backs of the feet and hands, the lesions are usually minute vesicles, although large ones are occasionally encountered. On the skin of the extremities, the most frequent type of lesion is the dry, scaly patch. In severe cases there may be much weeping and inflammation. At times, a hyperkeratotic condition is encountered on the feet and more rarely on the palms.

TABLE 2.—*Age Incidence of Eczematoid Ringworm*

Age	Number of Cases
1 to 10	2
11 to 20	9
21 to 30	53
31 to 40	66
41 to 50	24
51 to 60	6
61 to 70	1
	161

It is generally recognized that the lesions may be made much worse by heat, maceration, external irritation or bathing. On the other hand, the good effect of air, sunlight, coolness, dryness and lack of irritation is generally recognized.

The following study is based on 161 consecutive cases in my office practice. Out of a total of 1,800 consecutive new cases, 161 were eczematoid ringworm. One hundred of the patients were males, and sixty-one were females. Table 2 shows the age incidence.

Table 3 shows the occupation of those affected.

It is worthy of comment that the disease is much more frequently met in private than in dispensary practice, and that laborers and negroes are almost exempt.

Table 4 shows the distribution of the lesions.

In twenty-five instances, the nails were involved; in one case there was a well marked trichophytid; in six instances there was marked secondary infection; in twenty instances, other members of the family were affected.

Apparently the disease is most frequently acquired by treading where the unshod have trod; many cases are acquired from the runways of swimming pools, and from the floors of athletic clubs. The bath mat is another frequent source of infection.

TABLE 3.—*Occupation of Those Affected*

	Number
Housewife	40
Clerk	30
Business	27
Physician	12
Lawyer	7
Student	6
Army and navy	5
Scientist	3
Agriculturist	3
Undetermined	28
	161

TABLE 4.—*Distribution of Lesions*

	Number		Number
Hands only	24	Hands, feet, arms and legs	25
Feet only	54	Groin and perineum	22
Hands and feet	36		

DISABILITY

It is not generally appreciated that serious disability is frequently produced by this disease. In this series of cases, there were seventeen patients who were totally disabled for periods varying from two weeks to one year. Fourteen patients were totally disabled for from one to two weeks. In addition, thirty-two showed a marked partial disability. This makes a total of sixty-three cases out of 161 showing disability. Table 5 shows the occupation of patients having the 25 worse cases of ringworm.

A questionnaire sent to some of the leading dermatologists showed that these men had encountered disability in from 2 to 10 per cent. of their cases.

TABLE 5.—*Occupation of Patients with Disability*

	Number		Number
Housewife	5	Physician	4
Clerk	5	Business	3
Student	5	Army and Navy	3

DIAGNOSIS

The diagnosis must be made from four conditions: pompholyx, eczema, irritant dermatitis and erosio interdigitalis blastomycetica. At the present time there is much discussion of whether or not there is such an entity as pompholyx, opinion being about equally divided. In my office I have not seen one case in the last six years. Repeated and careful study of cases believed to be pompholyx has invariably revealed the presence of ringworm organisms. As a result of this, I am of the unqualified opinion that the disease formerly known as pompholyx does not exist.

The expression "eczema" is an unfortunate one, as has been emphasized by many writers, including High-

man [38] and myself.[39] It is usually a limbo into which undiagnosed cases are carelessly cast. Beyond any question, the vast majority of so-called eczemas of the hands and feet are simply examples of ringworm.

Irritant dermatitis, especially the variety produced by occupation, the too free use of soap and water, and contact with the primrose, may cause much difficulty, especially as irritation will frequently aggravate ringworm infection.

Recently, several cases of interdigital infection with a yeastlike organism, erosio interdigitalis blastomycetica,[40] have been described. Microscopic examination and cultures will usually result in a correct diagnosis.

A clinical diagnosis of ringworm can frequently be made by examination of the feet. Microscopic examination is important. It is best to snip off the top of a fresh blister, soak it overnight in a 10 per cent. solution of potassium hydroxid, and examine microscopically some twelve hours later. Dry scales on the limbs will usually reveal the presence of the organism.

PROGNOSIS

In this series of cases, fourteen have proved nearly intractable to treatment. Ten presented grave therapeutic difficulties. It should never be forgotten that recurrence is only too prone to occur.

TREATMENT

Numerous antiseptics have been tried. Whitfield's ointment; which should be much stronger in salicylic acid than originally described; mercurochrome-220 soluble in ointment or solution, iodin, chrysarobin, and all other antiseptics have been recommended. In my hands, the first two have been of much value. Drying lotions and powders are frequently necessary in cases in which there is much irritation or oozing. The ultraviolet ray, light curettage, air, sunlight, light open shoes and avoidance of irritation all have their place. Weekly treatments with one-quarter unit doses of the roentgen ray are often extremely useful. It is usually believed necessary to peel the affected skin before cure takes place.

We are completely ignorant as to what bodily conditions aid the development of eczematoid ringworm; it may be found, for instance, that hyperglycemia is an aid to the development of the organisms.

PHARMACOLOGY

Schamberg and Kolmer [41] have made some studies in the chemotherapy of fungous infections, and have reached the conclusion that iodin and sodium oxymercury orthonitrophenolate are superior as fungicides to any other medicaments tested. Various dyestuffs were not so efficient. It is probable that further studies will yield us a drug superior to any that we now possess.

CONCLUSIONS

Eczematoid ringworm is a common affection over the whole of the United States. It unquestionably causes much more disability, both partial and total, than has usually been credited to it. There is urgent need for an epidermiologic study of the condition. Better methods of treatment are urgently needed.

38. Highman, W. J.: J. Cutan. Dis. **34**: 259, 1916.
39. Hazen, H. H.: Etiology of Eczema, Arch. Dermat. & Syph. **1**: 642 (June) 1920.
40. Fabry, J.: Dermat. Wchnschr. **66**: 321, 1918. Greenbaum, S. S., and Klauder, J. V.: Yeast Infections of Skin, Arch. Dermat. & Syph. **5**: 332 (March) 1922. Mitchell, J. H.: Erosio Interdigitalis Blastomycetica, Arch. Dermat. & Syph. **6**: 675 (Dec.) 1922.
41. Schamberg, J. F., and Kolmer, J. A.: Studies in Chemotherapy of Fungus Infections, Arch. Dermat. & Syph. **6**: 746 (Dec.) 1922.

ABSTRACT OF DISCUSSION

Dr. J. W. Kerr, Washington, D. C.: I can testify from experience that this disease is intractable and disabling. For a month last fall, by reason of an attack, I was totally disabled. We are indebted to Dr. Hazen for bringing this disease to the attention of the health officers of the country. I dare say, the majority of public health men have no knowledge whatever of the disease. It is but natural that its undue prevalence should have been brought to the attention of health officers by the dermatologists, and they are the ones who will enlighten us on the prevalence of the disease in the general population. They are also the ones who must aid us in differentiating this disease from other skin lesions which are not generally recognized by public health officers. It is a notorious fact that the skin diseases, although most superficially located for purposes of diagnosis, are most confused in the mind of the average practitioner unless he has given special attention to them. The officers of the U. S. Public Health Service have had some reason to take account of the mycotic affections. For years, favus has been one of the "loathsome contagious diseases" excludable under the immigration laws. Ringworm has also been included in this category. Of recent years, special attention has been given to ringworm of the nails. In 1914, Dr. M. H. Foster of the U. S. Public Health Service reported 101 cases of ringworm of the nails discovered among arriving aliens within a period of eight months. A review of his paper makes it apparent that there was a lack of differentiation of the disease and certainly no recognition of the specific disease to which Dr. Hazen refers. In 1921, the presence of ringworm of the nails among arriving aliens was frequently manifest. The ratio was one in about 3,500 aliens examined. The problem was therefore a very practical one as to what should be done in this class of cases under the law. No greater service could be performed by the dermatologists of the country than the differentiation of the causative agents of ringworm and allied clinical types. In order to do so, exact records should be kept by dermatologists, and these records should be made available for epidemiologic studies. The figures given by Dr. Hazen are significant. For instance, age is apparently an important factor, and occupation another. The public health authorities, especially those engaged in research, should collaborate with the dermatologists of the country in determining the relative importance of these several factors. Dr. Hazen has referred to the cultural work of Sabouraud. Sabouraud himself recommended that cultural work should be carried on and the different infections typed. This is a class of work which can, of course, be done by laboratories in collaboration with dermatologists, or by the public health agencies.

Dr. William D. Stovall, Madison, Wis.: There has been a great increase in the prevalence of ringworm. Ringworm has become an important disease. In thinking why this should be the case, I have come to the conclusion that probably the development in the last few years of the laundry business in the way of the so-called "wet wash" may have something to do with the dissemination of the disease. There are being referred to me more and more people who suffer from skin affections. Sometimes I am able to find ringworm and sometimes I am not. Sometimes I am able by direct examination to find the organism without having these people call again; again, I fail altogether to make a diagnosis. However, I feel sure that these cases are ringworm. I think that the health authorities might do some work in this respect if they had these cases reported.

Infant Mortality from Tuberculosis in England.—The infant mortality from tuberculosis in England and Wales has been falling steadily and to a greater extent, even, than that among adults. Sixty years ago, namely, during the five-year period of 1861 to 1865, the infant mortality from tuberculosis, or the number of deaths under 1 year of age per thousand births, was 9.29 for tuberculosis of all sites, whereas in 1921 it was only 1.54, a decrease of 84 per cent.—Drolet, G. J.: *Am. Rev. Tuberc.* **8**:401 (Jan.) 1924.

RAPID PROVISIONAL MICROSCOPIC DIAGNOSES OF MALIGNANCY WITHOUT A MICROTOME *

BENJAMIN TAYLOR TERRY, M.D.
NASHVILLE, TENN.

The method here described is the result of my having missed a small area of malignancy in an examination I was called on to make a year and a half ago. A middle aged fleshy white woman had, in the upper and outer quadrant of her right breast, a small rounded mass about 1.5 cm. in diameter. In removing this mass the surgeon cut well around it and turned it over to me for microscopic examination. Two sections from this tumor were cut on the freezing microtome, and appeared benign. The surgeon was satisfied, and the patient was sent back to her room.

About two weeks later, I was not quite so busy and sectioned very carefully the rest of the mass. Much to my surprise, I found, in a part not previously examined, a small area that I believed was malignant. After careful study, I reported my findings to the surgeon, who soon afterward removed the breast and axillary lymph nodes. Both the breast and the lymph nodes were sectioned minutely, but no other areas suggesting malignancy were seen. The patient is doing well and has thus far shown no signs of a recurrence.

This experience set me to thinking. Could I do better the next time if I had a similar case? Not unless I could devise a method that would enable me to discover with considerable certainty and speed a small area of malignancy contained in a larger mass of tissue that was not malignant. It seemed obvious that it would be necessary to section the tissue much finer than I had previously done. Even if I did this, how was I to know which of my many sections contained the malignant area? As I sought an answer to this question, it occurred to me that many times I had observed, in stained slides of malignant tissue, areas that appeared different from any seen in benign tissue. Could I bring out quickly the malignant areas by staining tissue in the gross? I decided to try, and began by cutting thin, smooth slices of fixed tissue known to be malignant. These I stained with acid polychrome methylene blue and found that, in a surprisingly large number of cases, I could see the malignant areas either with the naked eye or by using a good magnifying glass.

This discovery interested me greatly, and I published a brief report.[1] But, in examining tissues stained in the gross for malignancy, I soon came across a number of cases in which neither the naked eye examination nor the examination with a magnifying glass was sufficient for a diagnosis. It became very desirable to modify the method so as to permit an examination with the low power of the microscope. Experiments soon showed that this could be done. All that is necessary is proper technic, a smooth, clean cut slice of tissue that will lie flat, a good, quick-acting stain, a strong light concentrated to a small beam that illuminates evenly and obliquely the surface examined, and a good low power microscope.

From the Department of Pathology, Vanderbilt University Medical Department.

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1. Terry, B. T.: Polychrome Methylene Blue Used to Help Locate Malignancy in Tissues to Be Examined Microscopically, J. A. M. A. 80: 1774 (June 16) 1923.

TECHNIC

In order to secure a smooth slice of tissue that will lie flat, I use a very sharp razor, and make parallel cuts by drawing the razor through the tissue with a long, sweeping stroke. Both sides of each section can then be stained and examined.

Stains.—The preparation of quick-acting stains I have already described,[2] but for the sake of convenience, the formulas and directions will be given again at the end of this paper. For fresh tissue, the alkaline polychrome methylene blue should be used, but for tissues that have been well fixed in formaldehyd, the acid polychrome methylene blue is much better.

Staining.—If the slices of tissue are large, the stain can be painted on the surface with a broad, soft, camel's hair brush. If the sections are not large, they can be immersed directly in a small dish of stain. Only a few cubic centimeters of stain should be placed in the dish at a time; as it is used up or becomes weak, it should be renewed. After staining for about five seconds, the stain is washed off quickly in distilled water. In Nashville and Chicago, tap water, if clear, can also be used.

Examination.—The moist, stained specimen, after a quick naked eye and low power examination, is placed at once in a shallow dish on the stage of a microscope so that the upper surface can be illuminated obliquely by a strong electric light concentrated to a beam from 2 to 3 mm. in diameter. This beam should fall on the surface of the tissue at an angle of about 45 degrees. Examination should be made at once, for strong light rapidly decolorizes the stained specimen. Should decolorization take place before the diagnosis is complete, the upper stained surface should be cut off with a razor, as the staining is quite superficial. The specimen can then be restained, or new sections can be cut and stained.

The Light.—I have tried a number of different kinds of lamps. For the examination of stained tissue with the naked eye or with magnifying glasses, a 50 to 60 watt shaded nitrogen bulb is quite sufficient. It is much more difficult, however, to illuminate satisfactorily tissues that are to be examined under a 16 mm. objective and a No. 10 (Bausch and Lomb) eyepiece. A small arc lamp adjustable in height and position and regulated by clock work (E. Leitz) gives good illumination, but the light is not steady. Much better are the results of a low voltage ribbon filament nitrogen bulb (Bausch and Lomb), condensed to a small beam by appropriate lenses. Still better, perhaps, is the little lamp E. Leitz supplies with a skin microscope. This lamp is very small, but gives a strong light, which is adjustable. As the lamp is attached to the barrel of the microscope it is always in position when needed. Good as this is, I am seeking a better lamp.

Microscopes.—For very low power examination of tissue, I use an E. Leitz binocular stereo magnifier, model 244, equipped with paired eyepieces, 7 ×. This has given me excellent results, although other instruments are doubtless satisfactory. For higher magnification, monocular or binocular microscopes equipped with a 16 mm. objective and No. 10 eyepiece (Bausch and Lomb) are excellent.

In my experience, the diagnoses made in this way by oblique illumination have been carefully checked subsequently by diagnoses made either with sections cut on the freezing microtome or cut after embedding in paraffin or celloidin. The new method has checked

2. Terry, B. T.: J. Lab. & Clin. Med. 8:137 (Dec.) 1922, and other data to be published.

satisfactorily with the older methods in more than 80 per cent. of my cases.

The new method of staining in the gross and examining by oblique illumination has seven advantages:

1. It is very rapid. If the tissue is well fixed, of suitable size, and not exceptionally difficult, the provisional microscopic diagnosis can frequently be obtained in less than sixty seconds.

2. It is seemingly dependable. One usually knows at once, in a given case, whether the diagnosis can or cannot be made by this method.

3. It is so simple that it probably can be easily and quickly acquired by any experienced pathologist.

4. It is applicable to well fixed tissue, and it may be applicable also to fresh tissue. As most of the specimens that come to me for diagnosis have already been placed in formaldehyd, my experience is much greater with fixed than with unfixed tissue. Unfixed tissue in thin slices can, however, be quickly, although rather imperfectly, fixed in sixty seconds by dropping it for this length of time into 4 per cent. formaldehyd solution (10 per cent. liquor formaldehydi) heated to about 95 C. It is convenient to boil the formaldehyd solution first, then take it off the heater and fix the tissue while the formaldehyd solution is cooling.

5. It is inexpensive, for it does not require much equipment that is not already present in every laboratory where tissues are diagnosed. The stains are very cheap. One dollar's worth should last a pathologist for months or years. The only pieces of equipment that may have to be acquired are the magnifying glass or stereo magnifier, and the lamp with which the upper surface of the tissue is to be studied.

6. It is apparently especially useful in locating a small area of malignancy in a larger area that is not malignant.

7. It is not restricted to the diagnosis of malignancy, for it shows other pathologic changes almost as well. With a little experience, it is not difficult, under favorable conditions, to distinguish acute from chronic inflammatory changes. Similarly, tuberculous giant cells and caseation necrosis may also be made out. I am inclined to think, therefore, that this method may prove to be particularly useful in studying tissues that ought to be examined as a routine, although clinically no suggestion of malignancy is entertained.

UNSUITABLE TISSUE

Not all tissues are equally suitable for diagnosis by oblique illumination after staining with polychrome methylene blue. Scrapings from the uterus in benign cases frequently give bits of tissue that are too small to be smoothly sectioned by a razor. Imperfectly fixed tissue or tissues that are necrotic or have undergone postmortem change or have been exposed for some time to radium or roentgen rays stain poorly, and may be difficult to diagnose. Moreover, there are cases of malignancy which are so difficult to diagnose that the best possible technic and perhaps the highest powers of the microscope may have to be resorted to. These cases are very difficult to diagnose by oblique illumination.

While, in my opinion, examination by oblique illumination is sufficient to establish the diagnosis in most cases of average difficulty, I do not believe it probable that this method will ever be used to the exclusion of the older methods. The new method permits the quick study of large surfaces, and it is of the very greatest aid in finding areas that one desires to study further. By eliminating examinations of sections that are unsatisfactory because they do not pass through the areas showing pathologic changes, this new method should effect a tremendous saving of time and material.

Two sample cases in which this method has been applied may be of interest.

REPORT OF CASES

CASE 1.—A small piece of tissue excised from an ulcerated penis is submitted perfectly fresh for microscopic examination. In order to make the tissue firmer and easier to cut so as to give a smooth surface, the specimen is dropped for one minute in solution of formaldehyd that has been heated to about 95 C. It is next fished out, washed quickly in cold water, sectioned with a razor, stained, and examined. By oblique illumination, plugs of atypical squamous epithelial cells are seen invading the underlying tissues. The diagnosis of squamous cell carcinoma is made and is immediately confirmed by frozen section examination.

CASE 2.—A breast that has been amputated for possible malignancy but which has been received in formaldehyd is cut into a number of thin slices, each of which is painted with polychrome methylene blue, washed under the tap, and examined by oblique illumination. Most of the tissue shows no evidence of malignancy. Nearly all the glands appear sharply demarcated from the surrounding stroma. In one area, however, the glands are not sharply demarcated and have undergone hyperplasia and are growing in solid masses. By oblique illumination, the cells here are found to vary in size and shape. Moreover, in some places, these nuclei are grouped closely together in masses, but in other places are relatively widely separated. The diagnosis of malignancy is easily made. Frozen sections show the presence of a medullary carcinoma in the malignant looking areas, and the changes of chronic mastitis in the areas previously regarded as benign.

PREPARATION OF STAINS

In preparing the stains, it is best to use stock solutions. Stock Solution 1 is made by placing 10 gm. of medicinally pure methylene blue in a large bottle and dissolving this in 1,000 c.c. of distilled water. Stock Solution 2 is prepared by dissolving 10 gm. of anhydrous potassium carbonate in enough distilled water to make 1,000 c.c.

Fresh Tissue Stain.—This is prepared by placing in a 250 c.c. heat resisting Erlenmeyer flask: Stock Solution 1, 15 c.c., and Stock Solution 2, 15 c.c. This is brought quickly to a boil and boiled for exactly sixty seconds from the time the solution is surely boiling. The flask is cooled quickly by pouring cold water on the outside. After filtering, the solution is ready to use.

Fixed Tissue Stain.—For all fixed tissue, the acid polychrome methylene blue should be used. This is made by placing in a 250 c.c. heat resisting Erlenmeyer flask 20 c.c. of Stock Solution 1, 20 c.c. of Stock Solution 2 and 60 c.c. of distilled water, a total of 100 c.c. This is boiled vigorously for two and one half minutes, cooled quickly under the tap, 10 c.c. of 10 per cent. acetic acid is added, and the mixture is shaken well and filtered. The solution is ready for use and keeps well. It stains beautifully tissues in the gross as well as those cut as frozen sections.

ABSTRACT OF DISCUSSION

DR. FRED D. WEIDMAN, Philadelphia: A number of years ago, when preparing museum specimens, I had experiences somewhat similar to Dr. Terry's. We were using sudan III for making the fatty tissues stand out, and were successful to such an extent that we thought that by using other dyes than sudan III we might get more valuable and picturesque specimens. We tried hematoxylin, also, and would take a slab, say of a fatty infiltrated pancreas, and soak it in the dye, differentiate with acid-alcohol and ammonia in the gross, if necessary, and we got some very picturesque red and blue

specimens. However, the blue was not permanent, so that we finally had to abandon it, so far as the museum specimens were concerned. But when a specimen need not be permanent it might be a very successful method, particularly to the surgeon at the operating table. By the use of basic dyes we could bring out all parts very distinctly, particularly the more cellular, richly nucleated ones; i. e., those containg a larger bulk of chromatic material. Perhaps at the operating as well as at the necropsy table a method something like this might be found to be advantageous, simply painting the cut surface with methylene blue or with sudan III. The surgeon often lets his patient wait on the table five or ten minutes for purely surgical technical reasons, and when the matter of time is not of great importance, he might be enabled to recognize by Terry's method such things as areas of "sarcomatous" change in uterine fibroids, etc., which otherwise would be undiagnosable without the microscope. That is, I would carry Terry's technic farther back than the laboratory, i. e., to the operating table.

DR. HERMAN SPITZ, Nashville, Tenn.: This method of making diagnoses is a tremendous factor in saving time, especially for those who are working in tissue pathology, not alone in the necropsy room and in the laboratory, but also in the operating room, helping the surgeon arrive at conclusions in ordinary diseases. In a large percentage of cases, a diagnosis of malignancy can be made grossly; not only would this method be of value in the operating room but I can see a great field for its usefulness in saving a lot of time in the laboratory when we have to make routine reports. The American College of Surgeons requires that every piece of tissue removed be examined. Now, to examine every tonsil, every appendix and other bits of tissue, requires a tremendous force of technicians and a great deal of time, and many institutions have not the money for this time-consuming work. With this method a trained pathologist could tell at a glance whether there is any suggestion of malignancy, and could outline chronic inflammatory conditions. A detailed report in numerous successive cases would help to establish whether this is a worth-while method to use in our work, and I want to urge every one here who works in tissues to give this a thorough trial, keep records of his findings, and report them.

DR. BENJAMIN T. TERRY, Nashville, Tenn.: I did not understand whether Dr. Weidman had published his method, or how long it takes to carry it out. It takes five seconds to stain by the method I have described. I have tried hematoxylin also, but methylene blue has appeared to be the key that unlocks the door to this particular problem. It should really be of tremendous value in the routine examination of a great deal of tissue, such as is necessary in most laboratories.

Photo-Activity of Substances Curative of Rickets.—The fact that apparently dissimilar therapeutic agents exercise equally favorable action in cases of rickets, led I. N. Kugelmass and I. McQuarrie of the department of physics of Yale University to investigate the possible common property of radiant energy in the various substances curative of rickets. Substances curative and noncurative of rickets were tested for their emission of ultraviolet light. The data presented show that the substances curative of rickets, on oxidation, blacken sensitive plates through quartz but not through glass screens. This phenomenon is undoubtedly due to the emission of ultraviolet radiation. The interposition of quartz plates excludes the effect of reducing vapors which otherwise blacken the sensitive plate. The nonblackening through glass screens excludes the emission of both radioactive and visible rays. The necessary conclusion is that on oxidation ultraviolet rays are produced. The experimental data further show that the oxidized substances curative of rickets when exposed to ultraviolet radiation liberate oxygen. These experiments point strongly to the common property of emitting ultraviolet rays of cod liver oil, egg yolk, sperm oil, bile, hydroquinone, on the one hand, and of sunlight or quartz mercury vapor radiation on the other, as the basis for their identical curative action in rickets.—*Science* **60**:274 (Sept. 19) 1924.

TOXIC NEURITIS OF THE EIGHTH CRANIAL NERVE*

ARTHUR B. DUEL, M.D.
NEW YORK

I am presenting this paper to call attention to a few striking points in the clinical aspects of infection of one or both branches of the eighth cranial nerve by toxic products carried in the blood stream from any part of the body.

The actual pathologic changes in the nerve itself are still a fertile field for further investigation, as Fraser [1] of Edinburgh has pointed out. However, we know as much about the nature of the pathologic process in the eighth cranial nerve as we do, for instance, in neuritis of the sciatic, the musculospiral and the facial nerves, or in the optic, the olfactory and the hypoglossal nerves. In the first three, poisoning from toxins produced from bacteria in distant abscesses throughout the body and conveyed to the nerve produces pain, because these are sensory nerves. In the last three, the same pathologic process produces, in one instance, impairment or loss of vision; in another, impairment or loss of smell; in another, impairment or loss of taste. So throughout the gamut of the nervous system a similar invasion of any particular nerve, be the lesion in the nerve fibers themselves or in the sheaths surrounding them, manifests itself in a loss or perversion of the particular function of that nerve.

Two of the cranial nerves seem particularly prone to this kind of infection, viz., the optic and the auditory, and of late years many different writers have called attention to the importance of focal abscesses in nasal accessory sinuses, teeth, tonsils and other parts of the body, as well as to toxemia arising from gastrointestinal putrefaction, as the etiologic factors.

Since the eighth cranial nerve is made up of two distinct bundles—one concerned with audition, the other with equilibration—enwrapped in a common sheath, it follows that a perineuritis causes a pressure on both bundles, with a consequent loss or perversion of both functions. This has given rise to a symptom complex, consisting of vertigo (often violent enough to cause reflex nausea and vomiting), nystagmus, impairment or complete loss of hearing, and tinnitus aurium. This symptom complex was first described by Ménière in 1861, in a case in which death occurred. A necropsy showed a sanguinolent exudate in both the cochlea and vestibular apparatus. It is very possible from this fact that the patient may have died from a meningitis and that the acute labyrinthitis may have been either propter hoc or post hoc.

One thing is certain, viz., that the syndrome may be temporarily produced by such mechanical means as whirling, hot or cold water, a galvanic current; or it may be produced through the blood stream by the administration of alcohol and many poisonous or narcotic drugs, or by ether or chloroform inhalation, or from syphilis, malaria and many other diseases.

In other words, as has been pointed out before, the symptom complex described by Ménière does not necessarily mean an exudate into the labyrinth of the ear, and can no more be attributed to such a condition, in

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* Read before the Section on Laryngology, Otology and Rhinology at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June, 1924.

1. Fraser, J. S.: Contribution to the Pathology of the Labyrinth, Ann. Otol., Rhinol. & Laryngol. **32**: 953 (Dec.) 1923.

the large majority of such cases, than the advent of a headache can be attributed to the presence of brain tumor.

The fixing of a name to a symptom complex which may arise from so many different causes, and which, in the original description, was due to an acute labyrinthitis, has brought about much confusion in our concept of the type of toxic neuritis from focal infection, which we constantly see, and to which alone I wish to call attention here.

The cases referred to so often exhibit such slight manifestations of vertigo, loss of hearing and tinnitus that earlier writers referred to them as pseudo-Ménière's disease. As a matter of fact, these types of toxic neuritis, depending on the severity of the infection, may exhibit variations in severity from slight upsets in the function of one or both branches of the eighth nerve to complete loss of both. The point that I wish to emphasize in this connection is that all these cases are due to the lesion of the nerve trunk, either in the neural sheath or the fibers themselves, and in no case to an exudate into the labyrinth.

They should never, therefore, be called Ménière's disease in the severest types, or pseudo-Ménière's in the milder types of infection, but rather should always be looked on as varying degrees of toxic neuritis. With this concept in mind, it becomes more simple to classify the cases, for which formerly one had no pigeonhole among his case records, and much more easy to understand why certain patients, with apparently an equal loss of function, regain their hearing or make a brilliant improvement under local treatment, while certain others under the same regimen make a constant downward decline in spite of the same amount of zealous effort.

While we do not know the exact pathologic condition, the clinical picture is clearly before us as an entity, and it may be understood and classified in just the same manner in which we visualize similar infections of the trifacial or sciatic or optic nerves.

Scientists had classified and controlled electricity and written laws for it long before they knew its exact nature. In a similar manner, we may write the laws of action in toxic neuritis before we have learned the last word in its pathology.

I will recite briefly a few typical cases, illustrating the clinical picture, from the mildest to the most severe forms.

Case 1.—Mrs. H., aged 38, wife of a physician, consulted me in November, 1912. Three years before, for three weeks, she had had tinnitus in the left ear, slight impairment of hearing, and a vertigo which prevented her from walking straight or from turning, without great unsteadiness. She had a tendency to walk on a left tangent, which she had constantly to correct. This gradually disappeared in about three weeks, during which time she had received inflations of the middle ear, to which treatment she and her otologist attributed the cure. She was now (November, 1912) having marked dizziness on making sudden movements, and had been compelled to stop horseback riding owing to a feeling while in action that she was falling to the left. A function test showed normal upper and lower tone limits on the right. The distance tests for acoumeter and forced whisper showed normal hearing on the right. On the left, the upper tone limit was lowered to 3.0 Galton, and the lower tone limit raised to 64 vibrations per second in the Edelman-Galton series. The time of audibility was diminished for all forks as compared with the other ear. Other tests were as follows: Rinne, positive for both ears; Weber, fork referred to the better ear; Swabach, an absolute diminution of bone conduction on the deaf side; whirling test, after nystagmus, left vestibular reactions about half as active as right.

The diagnosis was: functional impairment of both branches of left auditory nerve.

Examination of nasal accessory sinuses and tonsils showed no gross evidence of infection. Roentgen-ray and dental examination of the teeth showed marked pyorrhea and two apical abscessed teeth.

Removal of the teeth and treatment of the pyorrhea resulted in the cessation of vertigo in a few weeks. The hearing improved slowly, but never returned to normal. The tinnitus entirely disappeared. There has been no return after twelve years.

Case 2.—Miss S., aged 55, in January, 1921, came from a neighboring city, with a history of a mild attack of vertigo in October, followed about two weeks later by a prostrating attack, accompanied by nausea and tinnitus, with marked loss of hearing, and again two attacks of similar character in December. There had been no attacks since Christmas week. From the beginning, there has been a tendency to staggering gait, the impulse being to move in a tangent to the right. She had had a noticeable loss of hearing and slight tinnitus in the left ear.

She had had constant treatment at short intervals by catheter inflations, and attributed the gradual improvement from one attack to the other to this treatment. Each exacerbation had been attributed to a recrudescense of eustachian tubal catarrh. A functional test showed: lower tone limit: right, 16 vibrations per second; left, 16 vibrations per second; upper tone limit: right, 1.5 Galton; left, 5.0 Galton. Other tests were as follows: Weber, not lateralized; Rinne, positive right and left; Swabach, diminished right and left; distance, acoumeter, right, 1 foot; left, 1 foot; whisper, right, 20 feet; left, 10 feet. There was no improvement after catheter inflation; the tubes were patent. The whirling test showed the right vestibular apparatus to be twice as active as the left.

There was no evident infection of nasal accessory sinuses on inspection and transillumination. The tonsils were small and contained no pus or cheesy detritus.

The teeth, although beautifully cared for, had many fillings. They had been recently roentgenographed and pronounced sound; however, a second examination showed two with definite apical abscesses.

Removal of the abscessed teeth was followed by partial restoration of hearing, and no further attacks of dizziness.

The diagnosis was: double toxic neuritis of the eighth nerve.

Case 3.—Miss S., aged 22, came from Mississippi to New York for a short visit. Anxious to improve every moment, she danced nightly for a week. Early in the morning, on returning from a dance, she was attacked by a violent vertigo, nausea and vomiting, roaring tinnitus in the left ear, and deafness on that side. When I first saw her a few hours later, she had a normal appearing membrana tympani, complete loss of hearing on the left, with a noise apparatus rattling in the right. The sound in Weber's test was heard to the right. Reaction in the caloric test was absent on the left; there was a normal reaction on the right. The patient had never had any trouble with the ear previously. Teeth, tonsils and accessory sinuses showed no gross evidence of infection; subsequent roentgenograms confirmed this. On looking further for foci of infection, the fact was disclosed that a troublesome corn had been infected by a chiropodist a few days previously, and was suppurating. Pressure from an ill fitting shoe had done the rest. Appropriate treatment of the corn was followed by rapid recovery from the vertigo in about ten days, and gradual complete recovery of hearing in about two months.

The diagnosis was temporary complete loss of function of the eighth nerve from toxic neuritis.

Case 4.—K., a middle aged man, gave a history of mild tinnitus and slight impairment of hearing in both ears for a long period of years. Functional tests showed slight nerve impairment; removal of abscessed teeth was followed by cessation of tinnitus and improvement in hearing. Several years later, the tinnitus reappeared, despite the fact that the teeth had been carefully watched, and were sound. The tonsils were found to harbor hemolytic streptococci. Their excision was followed by complete cessation of the tinnitus.

CASE 5.—G. D., a boy, aged 16, had a marked loss of hearing in both ears. He had transient attacks of giddiness, and a functional test showed marked diminution of absolute bone conduction. Nevertheless, inflation was followed by decided but not brilliant improvement in hearing. Tonsils and adenoids were hypertrophied and infected; removal was followed by complete cessation of dizzy attacks and only partial restoration of hearing. Inflation no longer gives temporary improvement. The patient has evidently recovered the portion of lost hearing that was due to the tubal obstruction, but a part of the loss, which he sustained from the neuritis, has not been regained.

CASE 6.—F., a middle aged woman, who had a typical otosclerosis, and who had been under my care for years, suddenly had an additional slump, with distinct impairment of the nerve on one side, and marked vertigo. A capped tooth was found to be abscessed. Prompt removal was followed by immediate cessation of vertigo, and return of hearing to its previous condition.

I might add scores of cases from my records, showing all kinds of combinations of this type of infection engrafted on other ear conditions, but these are quite enough to illustrate the subject.

The point that I particularly wish to emphasize is that this condition, in mild or severe form, is constantly coming up and is not an obscure malady to be looked for a few times in one's practice.

The severer cases are liable to be recognized. The concept of a syndrome, as I have presented it, may help to make clear the varying phases as merely manifestations of different amounts of dosage of different kinds of toxins. Avoiding the thought of fitting these manifestations to the old idea of Ménière's disease, or later ideas on pseudo-Ménière's disease, will clarify the diagnosis.

To those who have sought an explanation for the failure to make the expected brilliant improvement in a case of evident catarrhal deafness in which marked obstruction to ventilation of the middle ear was present, when a number of similar cases had shown brilliant improvement after removal of the obstructions, the idea of concomitant impairment of the nerve by focal infection may appeal. A searching functional test in such a case might have revealed a slight decrease in absolute bone conduction, a slight diminution in the speed of the static apparatus on one or both sides or a history of slight vertigo which had hardly been thought of and had been attributed by the general practitioner to biliousness, etc., might have been brought out. This need not have dissuaded the physician in such a case from improving the ventilation of the tympanium in a catarrhal case in the future interest of the patient's hearing, but it might have led him to be more guarded in his prognosis as to immediate benefit and might have saved him some personal chagrin when contemplating the result, in comparison with a similar case in which focal infection had not played a part.

In addition, it might have induced the physician to eradicate some areas of focal infection, which would have safeguarded the patient against further impairment in the hearing.

To those physicians who have wondered at a sudden onset of additional deafness, accompanied by unusual and unexpected vertiginous symptoms, in a well established case of otosclerosis, investigation of focal sources of infection producing a concomitant nerve impairment may be helpful.

For my own part, I have serious doubts whether otosclerosis of itself causes degeneration of the nerve, and prefer to think of a patient developing vertigo and definite symptoms of nerve degeneration, as evidenced by the functional test, as having a concomitant toxic neuritis.

When one thinks of the patients with otosclerosis who have had such manifestations, it immediately comes to mind that it has happened early in cases as well as late. It has happened in persons who previously had had very marked deafness from fixation of the stapes and in persons with very moderate deafness due to the fact that the islands of spongification were away from the oval window and the stapes was not fixed.

In other words, the nerve degeneration and vertiginous symptoms occurring in otosclerotis have no definite relation to the length of time of the lesion or to the previous amount of deafness, which has been dependent entirely on the amount of spongification and its position with reference to the oval window and the consequent fixation of the stapes.

Toxic neuritis of the eighth nerve can happen either alone or along with neuritis of other nerves. This may happen early or late in life. It may happen to patients who have had no previous trouble with hearing, to those having a definite catarrhal otitis or to those having otosclerosis, at any stage.

If physicians bring this concept into the daily practice of otology instead of the theory of otology, it will result in great satisfaction to them and much help to their clientele.

4 East Sixty-Fifth Street.

ABSTRACT OF DISCUSSION

DR. J. W. JERVEY, Greenville, S. C.: In these cases, differential diagnosis, encompassing the labyrinth, cochlea and vestibule, central, peripheral and cerebral, cortical and cerebellopontile lesions, is so confusingly intricate that the average practical otologist is soon lost in the mazes of a kind of scientific phantasmagoria. While these eighth nerve involvements are of the utmost practical importance in our daily work and are frequently observed, it does not appear that their etiologic modus operandi is well understood. Are the symptoms the effect of intrinsic neural pathology; an obscure and undemonstrable toxicity; of localized inflammatory reaction (as is assumed, for instance, in many diagnoses of "retrobulbar optic neuritis"); of serous exudates within or without the sheath; of adventitious pressure from contiguous tissue, or what not? It is true that the pathologic phenomena in some of these cases (as arteriosclerosis or gumma, for example) may be visualized clearly; but many, perhaps the large majority, of the individual cases are taken on faith, and leave an open field for wide and interesting speculation. It is not unreasonable to assume that the localized eighth nerve phenomena in these "focal infection" cases that Dr. Duel speaks of are pathologically similar to those occurring concurrently with or as sequels to various toxemias, such as the acute infectious fevers. Syphilis and tuberculosis afford a wider range of pathologic variations. Eighth nerve effects, similar in all respects to those manifested in Dr. Duel's cases, are encountered in poisoning by various drugs and chemicals, such as lead, arsenic, alcohol, nicotin, quinin and the salicylates, and, perhaps, even thein and caffein; but their pathology is probably different from the foregoing, and variant as compared to each other. So also as to the circulatory and fatigue cases. One can readily see, too, that it is at times eminently desirable to differentiate the trespasses, say, of gout and "rheumatism" or diabetes on the eighth nerve from those of the focal infections cited by Dr. Duel, even though the gout and the nerve symptoms may seem to be crying out for recognition as children of the same parental focus in tooth, tonsil, sinus or intestinal tract. Nor is it always sufficient to stop with a diagnosis of toxic infection. Concurrent diseases are no rarity, and what is assumed to be a toxic infection may in reality be of entirely different causation; hence the importance of trying to determine whether we are confronted by a central or a peripheral lesion, or whether we may not be dealing with

a cortical sensory lesion, and an actually histologically sound eighth nerve. I feel that many of the problems involving the eighth nerve are preferably to be eliminated from the field of the practical and busy otologist, and should be passed on to the neurologist.

DR. NORVAL H. PIERCE, Chicago: I want to caution against depending too much on a diagnosis of toxic neuritis of the eighth nerve. It is a difficult matter, as shown by the histories Dr. Duel cites. The symptoms may be those of brain tumor, of syphilis, of innumerable other pathologic conditions, so that we should, perhaps, leave toxic neuritis to the last as the causative factor. And it is not altogether scientific. I am sure that Dr. Duel does not mean to imply that all these cases are due to focal infection. It is apparently proved that the non-oxidized substance from the intestinal tract may cause these disease phenomena. As to spongification, Dr. Duel says that we may have toxic neuritis in the course of spongification of the labyrinth. I do not know why we should, but we know from pathologic investigations that a sudden increase in defective audition in all probability is due to spongification causing a communication between the lymph system of the bony capsule, and the perilymph of the cochlea.

DR. CLARK W. HAWLEY, Chicago: I want to mention two cases of paralysis of the external rectus muscle of the left eye due to infection of the mastoid area. The first patient was a young woman who had been suffering for a week with chills and fever and had to have an emergency operation. One week after the exenteration of the mastoid, she developed extreme paralysis of the external rectus muscle of the left eye. That continued for nearly a month, when it disappeared. The probabilities are that there was a slight infection along the sixth nerve, which we understand passes over the petrous portion of the temporal bone. Another case was called to my attention because of paralysis of the external muscle of the left eye, and the man was nearly deaf when I was called. He had been treated for something else, I think typhoid fever, and we made a diagnosis of mastoiditis and inflammatory brain trouble. We operated on the mastoid. The operation was a success, but the man died three hours afterward. The two cases were rather rare—I have never read of two cases like them of paralysis of the external rectus muscle.

DR. CULLEN F. WELTY, San Francisco: I agree absolutely with everything Dr. Duel said. I want to add something. It is this: If, in a given case one cannot find any foci of infection, what is one to do next? This is what I have done, and I have made some important findings. I have recommended that such patients be given two or three doses of arsphenamin, regardless of the fact that they may be Wassermann positive or negative. In some of the negative cases, I have made positive findings. I think that this is very important. It is an accepted fact today that Bell's palsy is a neuritis and is probably caused by infection. Regardless of whether the man had crypts in his tonsils or had an acute inflammation, we must look to focal infection as the cause of this Bell's palsy, and I think that Dr. Duel is quite right in checking up such observations regardless of what Dr. Pierce has to say about it.

Study of Hereditary Aspects of Disease.—There are, indeed, certain important phases of medicine for the study of which the opportunities are in some respects most favorable in small communities. For example, various hereditary aspects of disease can be studied most readily in rural districts, where the population undergoes relatively little migration. Here likewise the effects of racial intermixture upon predisposition and immunity can be most easily followed. Or, as a more practical problem, it would be interesting and instructive to compare the complications met in a large series of obstetrical cases in country practice with those found in the city or under hospital conditions. Every physician of an inquiring mind, wherever he may be located, can readily find all about him numerous medical problems of importance, which he can help to solve. Whether his ability and opportunity be great or small, it is his duty to make the most of them.—C. M. Jackson: *Science* **60**:229 (Sept. 12) 1924.

OBSERVATIONS ON THE DIPHTHERIA CARRIER AS AN AGENT IN THE SPREAD OF DIPHTHERIA*

F. M. MEADER, M.D.
Director of Medical Service, Detroit Department of Health
DETROIT

It is the practice of the Detroit Department of Health, whenever a case of diphtheria is reported, to ask the police department immediately to post a quarantine sign on the home in which the case is reported. A nurse is detailed to the home as soon as practicable in order to adjust quarantine signs, give instructions relative to the observance of quarantine, and take cultures from all contacts. She also notes and reports to the department the names and ages of contacts, and whether or not they have received immunizing doses of diphtheria antitoxin.

TABLE 1.—*Diphtheria Cases with Associated Contacts and "Carriers," According to Disposition of the Case*

Cases	Total No.	Went to Hospital	Quarantined at Home
Primary case of diphtheria	432	203	229
Secondary case of diphtheria	46	29	17
Total	478	232	246
Secondary Cases			
Under 10 yrs. of age, prophylactic immunized	18	11	7
Under 10 yrs. of age, not prophylactic immunized	13	9	4
Over 10 yrs. of age, prophylactic immunized	11	6	5
Over 10 yrs. of age, not prophylactic immunized	4	3	1
Total	46	29	17
Contacts with Foregoing Cases			
Under 10 yrs. of age, prophylactic immunized	350	163	187
Under 10 yrs. of age, not prophylactic immunized	192	101	91
Over 10 yrs. of age, prophylactic immunized	699	371	328
Over 10 yrs. of age, not prophylactic immunized	612	273	339
Total	1,853	908	945
Diphtheria Carriers Associated with Foregoing			
Under 10 yrs. of age, prophylactic immunized	61	26	35
Under 10 yrs. of age, not prophylactic immunized	33	18	15
Over 10 yrs. of age, prophylactic immunized	58	21	37
Over 10 yrs. of age, not prophylactic immunized	45	18	27
Total	197	83	114

Persons who receive an immunizing dose of diphtheria antitoxin are released from quarantine as soon as a report from the laboratory indicates that there are no diphtheria organisms in their throats. Persons who do not receive an immunizing dose of antitoxin are required to obtain two negative culture reports from the laboratory before they are released from quarantine. The second group of patients is therefore detained in quarantine about two days longer than are those who are immunized. This is a considerable stimulus to secure the prophylactic use of diphtheria antitoxin.

A study of 432 cases of diphtheria reported during March and December, 1923, indicating whether or not the patients went to the hospital or were quarantined at home, etc., is given in Table 1. From this table it will be noted that there are forty-six secondary cases,

* Read before the Section on Preventive and Industrial Medicine and Public Health at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June, 1924.

that is, patients who developed the disease within the incubation period, after exposure to a known case of diphtheria. This makes a total of 478 cases of diphtheria.

Associated with the cases mentioned above were 1,853 contacts, and among these contacts were 197 diphtheria carriers. The question immediately arises,

TABLE 2.—*Contacts and Cases of Diphtheria Associated with One Hundred and Ninety-Seven Diphtheria Carriers*

	Carriers				Contacts				Secondary Cases				Primary Cases			
	10 and Under		Over 10		Under 10		Over 10		Under 10		Over 10		Under 10		Over 10	
	Immunized	Not Immunized	Immunized	Not Immunized	Immunized	Not Immunized	Immunized	Not Immunized	Immunized	Not Immunized	Immunized	Not Immunized	Immunized	Not Immunized	Immunized	Not Immunized
Subtotal....	61	33	58	45	40	130	225	184	14	7	5	2	..	100	..	36
	..	61	..	58	..	40	...	225	..	14	..	5	..	...	..	..
Total by ages	..	94	..	103	..	170	...	409	..	21	..	7	..	...	..	..
	58	..	..	..	225	...	...	...	5	..	..	..	..	...	..	..
Total immunized.....	119	..	..	..	265	...	...	...	19	..	..	..	..	...	..	..
	..	..	..	94	..	...	...	170	..	..	..	21	..	...	..	..
Total.....	..	..	..	197	..	...	...	579	..	..	..	28	..	...	..	..
	..	..	..	..	..	...	...	...	..	..	..	..	14	7	5	2
	..	..	..	..	..	...	...	...	..	..	..	..	..	14	..	5
Subtotal cases.....	..	..	..	..	..	...	...	...	..	..	..	..	..	121	..	43
	..	..	..	..	..	...	...	...	..	..	..	..	..	...	..	121
Total cases..	..	..	..	..	..	...	...	...	..	..	..	..	..	..	..	164

Were these diphtheria carriers the result of the cases of diphtheria, or were the cases of diphtheria caused by the carriers? I have little information to offer on this point except that it will be noted that, among the contacts of cases quarantined at home, the number of diphtheria carriers was greater by thirty-one than was the incidence among the contacts of diphtheria patients who went to the hospital. It is true that there were more cases of diphtheria quarantined at home than there were patients who went to the hospital. However, if the same proportion had been maintained between the carriers of the two groups as existed between the groups of cases mentioned above, it will be noted that there should have been about eighty-eight diphtheria carriers associated with those patients who remained at home instead of 114, so that there are apparently twenty-six more diphtheria carriers among contacts with the patients who remained at home than with the patients that went to the hospital. Again, it may be objected that there are more contacts associated with the patients who remained at home than there are with those patients who went to the hospital; but if the same proportion that existed among diphtheria carriers of the two groups existed between contacts of the two groups, there should be eighty-six carriers associated with the cases that remained at home, instead of 114, as actually existed; so that from these figures it would seem that the longer a case remains exposed to contacts the greater will be the number of diphtheria carriers.

The results of a study of the cases and contacts associated with 197 diphtheria carriers included in this investigation are summarized in Table 2. From Table 2 it will be seen that, associated with the 197 diphtheria carriers, were 579 contacts, 265 of whom had been immunized. However, in this group of contacts were 136 primary cases of diphtheria and twenty-eight secondary cases, making a total of 164 cases of diphtheria. Subtracting 579 contacts from 1,853 (mentioned in Table 1), we have a group of 1,274 contacts among whom were no diphtheria carriers. Subtracting 164 cases of diphtheria from 478 cases (mentioned in Table 1), we have a group of 314 cases of diphtheria.

If the same proportion between contacts and cases existed in the groups in which there are no diphtheria carriers as there does in the group in which there are diphtheria carriers, there would be 361 cases of diphtheria, thus:

$$579 : 1{,}274 :: 164 : x \qquad x = 361$$

But there were only 314 cases of diphtheria, which again suggests that diphtheria *cases* are the more important factor in this problem.

The problem of dealing with diphtheria carriers has received considerable attention in our department, with the result that the difficulty of curing diphtheria carriers has impressed us with the largeness of the task. In our efforts to cure diphtheria carriers, many children have been detained at home, sent to clinics, or sent to their private physicians, and been treated in various ways over long periods of time. Some children have been detained from school practically all the year. Three years ago, it was noted that when a virulence test was made on the organism and, after negative report, the child was allowed to return to school, no cases of diphtheria developed in the school following the return of this carrier.

A report of the Minnesota State Department of Health stated that, when a virulence test of more than 1,000 diphtheria carriers was taken, it was noted that only a few carriers were found to have virulent organisms if they were not associated with a clinical case of diphtheria; whereas a very large percentage were found to have virulent organisms if they were associated with a case of clinical diphtheria. This observation, together with our own experience, lead us, two years ago, to permit children who were harboring diphtheroids, but were not exposed to a clinical case of diphtheria, to return to school at once without further treatment. The result of this first year's experience was reported [1] last year. A summary of that work is presented in Table 3.

TABLE 3.—*Exposure of Diphtheria Carriers Who Had Not Been Associated with a Clinical Case of Diphtheria to School Children, 1922*

School	Enrolment	No. of Carriers Returned	Date Carriers Returned	Cases of Diphtheria in School Since	Cases of Diphtheria in Same Room Since	Date Subsequent Case in Same Room	Estimated Number Contacts in Same Room
Columbian.....	1,181	1	12/ 9	6	1	1/ 3	20
Craft.....	694	1	11/ 7	7	2	11/16	20
Grayling.....	481	1	10/20	3	1	12/13	20
Lillibridge.....	1,109	1	10/18	9	1	11/25	20
23 other schools.....	18,237	28	.....	18	0	.....	460
	21,702	32	.....	43	5	.....	540
Estimated number home contacts.....							90
Total contacts.....							630

$32 : 197 :: x : 579$ $\qquad x = 90$

From this table it will be noted that thirty-two carriers were returned to school and that, in five instances, diphtheria cases appeared in the rooms attended by these carriers; but their appearance was a long period

1. Meader, F. M., in discussion on Hayne, J. A.: Problems in the Control of Diphtheria, J. A. M. A. **81**: 2073 (Dec. 22) 1923.

of time after the return of the carrier, so that we believe the carrier was not responsible for the cases which appeared subsequently in the same room.

It will be further noted that, in twenty-eight schools, no cases of diphtheria appeared in the same room at all during the year subsequent to the return of the diphtheria carrier. Estimating the number of contacts in the rooms to which carriers had been returned, and also estimating the number of home contacts with these carriers, based on Table 2, we see that there were 630 close contacts with no case of diphtheria immediately appearing. So successful did this method appear to be that it was continued during the last year with the result presented in Table 4.

TABLE 4.—*Exposure of Diphtheria Carriers who Had Not Been Associated with Diphtheria Cases to School Children, 1923*

School	Enrolment	Number of Cases Returned	Date Carriers Returned	Diphtheria Cases in School Since	Diphtheria Cases in Same Room Since	Date Subsequent Case in Same Room	Estimated Number Contacts in Same Room
Beard	797	1	10/ 6	8	1	10/25	20
Barstow	1,206	1	12/11	7	1	2/25	20
		1	10/18	6	1	12/10	20
Carstens	1,833	1	11/15	8	1	1/24	20
Hunter	770	1	11/14	2	1	12/16	20
Keating	1,842	1	11/27	8	1	4/ 1	20
Poe	1,006	1	11/ 9	6	1	2/29	20
St. John	402	1	11/20	2	1	3/ 5	20
Trowbridge	712	1	1/18	1	1	1/30	20
40 other schools	45,922	88	.....	181	0	.....	820
48	54,490	97	.....	241	9	.....	980
35			Estimated home contacts				314
83			Total contacts				1,294
							630
							1,924

97 : 197 :: x : 579 $x = 314$

From this table it will be noted that ninety-seven carriers were returned to forty-nine different schools, and that in nine instances a case of diphtheria appeared in the same room subsequent to the time the carrier returned to school; but in each instance a long period elapsed before the case developed, except in one instance. In the Trowbridge School, a carrier was returned, Jan. 18, 1923, and a case of diphtheria developed, January 20. Two days is a short incubation period for diphtheria; furthermore, only one case developed in this room, and, in fact, it was the only one which developed in the school, so that we feel that this carrier probably had nothing to do with the onset of diphtheria in this case. It will be further noted that eighty-eight carriers returned to schools, and no case of diphtheria appeared in the rooms to which they returned.

Estimating the number of contacts in the rooms, as done in Table 3, we find that there were 1,294 close contacts among whom no cases of diphtheria immediately occurred. In this connection, it should be mentioned that during the last three years we have given toxin-antitoxin to kindergarten and first year children. About one quarter of this group have been immunized by this method each year, so that it is possible that in some rooms about one quarter of the children have been immunized with toxin-antitoxin.

If we combine the records for the two years, we have 129 carriers returning to seventy-six schools, in contact with about 1,924 persons, with no case of diphtheria developing. Therefore, we feel quite justified in assuming that diphtheria carriers who have not been exposed to a known case of diphtheria may be ignored from a public health point of view. So sure do we feel that this inference is correct that children and infants who are found to be diphtheria carriers unassociated with a clinical case of diphtheria are permitted to return to our child welfare clinics, and so far there have been no injurious results.

In the matter of treatment of diphtheria carriers who have been associated with clinical cases, I have little to offer that has not been already reported. Organisms are for the most part located in colonies in the epithelium of the tonsils. Occasionally, they may be found in the crypts. By serial sections of the tonsils of diphtheria carriers, it has been easy to demonstrate the colonies scattered over the surface of the tonsil in this epithelial layer. These colonies on the tonsil are microscopic, and extend through all layers of the epithelium. Removal of the tonsils of these diphtheria carriers has cured the condition immediately in about 80 per cent. of the cases. Medication of the throat with caustics only occasionally clears up the condition. Medication that will stimulate the production of the normal mucous membrane seems to be the method of choice. It has been noted, however, that any method will produce results promptly if it is going to at all, so that the use of a single method for a period longer than a week is not recommended. Application of a saturated aqueous solution of gentian violet, or a 5 per cent. solution of mercurochrome-220 soluble swabbed on the throat three times a day, have given results in from 30 to 40 per cent. of the cases when control patients with no treatment did not recover in the same period. In the small series of cases treated by the roentgen ray, success was more consistent in the throat cases than it was with the nasal or ear cases. This work, however, was done three years ago, so that I should not care to state the results that may be obtained by the more improved technic.

SUMMARY

It would appear that diphtheria patients are more likely to be agents in the spread of diphtheria than are carriers, but it cannot be denied that carriers who harbor organisms capable of producing the disease may be very potent agents in the spread of infection. However, I believe that carriers of diphtheroids who have not been associated with clinical cases of diphtheria may be disregarded from a public health point of view.

ABSTRACT OF DISCUSSION

DR. DWIGHT M. LEWIS, New Haven, Conn.: I wish to emphasize the increasingly recorded views that there is evidence that the virulent throat carrier, as well as throat case, is little, if at all, infective for further cases. It may be that such facts may be read into Dr. Meader's results, since he mentions only tonsils. Bedside or field investigation of case and contacts in diphtheria gave me the clinical evidence that other specific respiratory diseases, measles in the main, chickenpox, whooping cough and mumps control the morbidity and mortality of diphtheria. A picture similar to that found in a small percentage of convalescent cases of diphtheria may be found during the course of the other specific diseases mentioned. The picture is that of an excoriating, usually unilateral, nasal discharge, not infrequently chronic, accompanied with lesions of the lip, cheek or hands. I have recently shown that, in a small number of instances in which virulence tests could be obtained, such nasal discharges, bacteriologically positive, were positive in virulence although the individual from whom they came, bacteriologically positive, had a negative virulence. I follow every case of measles, mumps,

chickenpox, whooping cough and sore throat that is reported or that can be found, during the course and on convalescence, among that part of the population which has been well seeded with diphtheria in the past. I also examine every school child moving into the city, before it may be permitted school attendance. The express purpose is to find nasal diphtheria carriers. We isolate the virulent and the nonvirulent ones, the only difference being that we release nonvirulent ones with the cessation of visible discharge or in the absence of other respiratory diseases. When four of the five boroughs of a large metropolitan city for the first quarter of 1924 have an increased morbidity from measles of 385 per cent., with an increased measles mortality of 18 per cent., over a similar period in 1923, we take stock of the figures for diphtheria. In those four boroughs mentioned, the morbidity for diphtheria has increased 18 per cent. during the first quarter of 1924 over the first quarter of 1923, and the mortality has increased 40 per cent. It is stated that reduction of morbidity rates has not accompanied reduction in mortality rates. From 1914 to 1921, inclusive, we had the usual average yearly morbidity rate of 200 or more with an average mortality rate of 15 or more. In 1922, a measles year, our morbidity rate was 100 and the mortality rate was 5.3. In 1923, the respective rates were 65 and 4.6. For the first five months of 1924, we have reduced the expected morbidity, in terms of that of the last nine years, 50 per cent. We have had thirty-six cases, one death and twenty-eight carriers, as compared with forty-nine cases, one death and six carriers for the same period of 1923. In terms of control, as expressed statistically, and from the point of view of other independent respiratory diseases controlling virulence, our morbidity and mortality rates for 1923 yield further suggestive data. In a population of 173,000, standard for age and sex, we had a district, with a population of 28,000, composed of three city wards, which was not under our immediate jurisdiction and did not carry out our procedures from July 1, 1920, to July 1, 1923. The morbidity rate for diphtheria for 1923 in this area was 107, and the mortality rate was 14. Included in the remaining 145,000 population is another district of five city wards with a population of 40,000, in which the record for the nine years previous to 1923 both in morbidity and mortality rates was yearly one in excess of that of the district mentioned previously. In 1923, the morbidity rate of this district was 60, and the mortality rate was 2.5. To obtain a morbidity rate from diphtheria of 55 and a mortality rate of 2.8 in a population of 145,000 through search for and control of nasal carriers in advance of, as well as in connection with cases during periods of unrelated respiratory diseases is our evidence that the nasal diphtheria carrier is *the* agent in the spread of diphtheria. For comparison I might add that for 1923 the morbidity rates for diphtheria for the four other larger cities of the state with populations between 65,000 and 145,000 varied from 250 to more than 300, and the mortality rates from 13 to 20. The two hardest hit were the only two with simultaneous epidemic measles.

DR. A. J. CHESLEY, St. Paul: Dr. Meader's experience covers rural state work, not Detroit alone, on which his conclusions are based. I agree that cases are more likely to spread diphtheria than carriers, including recognized clinical cases, mild cases diagnosed only by cultures, and concealed cases; that carriers of virulent diphtheria bacilli cause clinical cases; that nonvirulent carriers are not dangerous; that Detroit's method of handling carriers without testing virulence might be used for study where full time health officers, nurses and laboratory service allow efficient epidemiologic follow-up, but nowhere else; that carriers with nasal discharge are especially dangerous, and contacts having positive cultures should be quarantined. But I would not return a carrier to school without a virulence test even if no contact with a clinical case was known. Who can be certain of that? The Minnesota state board laboratories make virulence tests on all convalescents remaining positive forty days after subsidence of symptoms, on all positive cultures from exposed well persons, and on all positives among school or institution groups. Occasionally a virulent carrier is excluded from school and kept under modified quarantine for a long time. Other treatment may assist in clearing up a virulent carrier, but tonsillectomy has been found most successful. Certain Minnesota institutions follow state board directions, first recommended in 1899, to keep infection out and control it if introduced. For ten years the University Hospital, receiving about 2,500 patients of both sexes and all ages from every part of Minnesota per annum, has controlled diphtheria by entrance cultures. Less than 0.1 per cent. of entrance cultures have been virulent. Contact between certain of these carriers and clinical cases of one type or another has been traced. Dr. H. S. Diehl, director of the students' health service at the University of Minnesota, takes cultures when making entrance physical examination of students. Last year fourteen of 2,715 new students showed diphtheria bacilli in cultures. Only two of the fourteen were virulent. No children lived in these students' homes. After being warned of the danger of spreading infection, they were allowed to attend classes while being treated for relief of the carrier state. No clinical cases developed among their associates. We conclude that organisms are virulent almost invariably in persons convalescent from diphtheria and in persons intimately associated with cases or convalescents, but rarely virulent in other well persons. Virulence tests should not be discontinued in state work.

DR. JOHN F. HOGAN, Baltimore: In Baltimore, some years ago, I became interested in contact carriers. Two workers in the Baltimore City Health Department, Dr. Bailey and Dr. Hachtel, were assigned to the work on known contact carriers; that is, household contacts who were known to be in direct contact with the case, and they found that about 97 per cent. were virulent. It seems to me rather dangerous for the health officer to release quarantine on clinical appearances, because that is a subject of diversity of judgment. Two good men of equal training and years of experience may look at the same throat; one may say there is a hyperemia and one may say there is not, and it is a question of tossing a coin as to which is correct. We should follow the standard laboratory method—microscopic and guinea-pig—and live up to it until we find something better. Another thing about these virulent carriers: How do we know how many are mild missed cases? For example, persons who have chronic pharyngitis do not think anything about a little scratching in the throat before retiring at night, and these persons may spread the disease. I would sound a note of warning against using medicinal agents for carriers, especially the penetrating remedies, such as mercurochrome-220 soluble and acriflavine. About three years ago, in Baltimore, some men started to use acriflavine to clear throats not only of carriers, but also of convalescent cases. About the same time we had some cases from a reformatory in our infectious disease hospital, and as these cases were excellent ones to work on, acriflavine was tried in a series of cases, all of which promptly received three negative cultures. Treatment was discontinued for one week and cultures taken again, and in every case the cultures were positive. These subjects were convalescent, and we therefore regarded them as being virulent, and it would have been a very dangerous procedure to turn them loose on the public when they had received the first three negative cultures after the use of acriflavine. For that reason, I think, we should discourage the use of penetrating medicinal remedies and adhere to the three negative morphologic cultures, and demand a complete tonsillectomy in cases which remain virulent persistently.

DR. O. B. NESBIT, Gary, Ind.: In schools using the duplicate, platoon, or Gary plan of program, the opportunity for intimate contact and spread of diphtheria and scarlet fever is not as great in the regular classroom as in the kindergarten, special rooms, such as the art room, where six classes may occupy the same room during the day, the auditorium and playground or gymnasium. As I read these charts, these schools are not free enough of diphtheria to give the method unqualified endorsement, and I believe that the regulations should be modified very slowly until the death rate of the disease is further reduced. The absence of found cases in class may not be as significant as it appears. The carrier of diphtheria should be regarded as dangerous until all means have been exhausted to prove that the germs are avirulent.

DR. MILLARD KNOWLTON, Hartford, Conn.: According to figures given, a total of 129 carriers not in contact with cases were returned to school during 1922 and 1923. In thirteen

instances such return was followed by a case of diphtheria in the same room with the carrier. This is an incidence of 10 per cent. Without comparative figures we do not know how far this may deviate from the average incidence of diphtheria in schools. However, the figure seems rather high, and I am disposed to agree with the speaker who deems it advisable to make virulence tests in such cases.

Dr. F. M. Meader, Detroit: I quite agree with those speakers who referred to the diphtheria carrier with nasal discharge as being a very potent factor in spreading diphtheria. In boarding houses where we find a case of diphtheria, one of the first things we do is to look among the children for those having discharging noses; we thereby frequently discover the one largely responsible for the case. In regard to the importance of negative cultures, it was our practice at one of our hospitals to require six negative cultures before we release the patient from the hospital. One patient had been in the hospital eighteen months as a diphtheria carrier. Two successive negative cultures does not mean that the patient is free of diphtheria organisms. As health administrators, we find that, for practical purposes, two negative cultures are sufficient to protect the public. Secondary cases do not develop very often. Medication is quite unreliable. However, it should be given if tonsillectomy cannot be obtained. Removal of tonsils and adenoids is the best method of treatment. Carriers who were not associated with clinical cases of diphtheria apparently did not cause diphtheria cases to appear. If the nurse finds a child in school complaining of sore throat, she takes a culture. If the report comes back positive twenty-four hours later, the diagnostician sees the child. When the diagnostician is given the report, he is also given information as to whether or not there have been two cases of diphtheria in the school room during the past week. If there is no history of diphtheria in that school room, and if in the neighborhood or in the family there have been no clinical cases of diphtheria, and if on examination of the child there is no apparent evidence of diphtheria, he reports, "A carrier, but not dangerous; may return to school." Of course, if there is clinical evidence or history of association with a clinical case, the record goes back, "Diphtheria carrier; exclude from school." We have these two groups of carriers. A large proportion of these carriers are not associated with clinical cases. This study justifies us in not holding these children out of school for treatment. Whether or not it would apply out in the state, I do not know; but I see no reason why it should not, if the work is carefully done.

FOREIGN BODIES IN THE LENS

A NEW METHOD OF REMOVAL *

JOHN A. DONOVAN, M.D.
BUTTE, MONT.

In the case of a boy, aged 13, which I [1] reported in 1911, both of the lenses contained several pieces of giant cap, which were extracted by a regular combined cataract extraction six days after the injury, on the two eyes at the same time, under a general anesthetic. At present, after thirteen years, this boy has practically normal vision with only one pair of lenses for near and distance: R. $+6.00 = +3.25$ ax 105°; L. $+6.00 = +3.25$ ax 30°. However, not all cases have so fortunate an outcome.

In three extractions of the lens by the regular method from one eye of each of three boys injured by exploding several giant caps, two were entirely satisfactory, but in the third, at a later examination, I found a piece of brass in the remaining capsule, which, by the way, after four years, still remains there, apparently inert. In the other eye, a piece, which, at the time, was obscured by the upper edge of the iris, fell down after several weeks and became embedded in the lower anterior capsule, and, with a small scar surrounding it, remains there; the body of the lens and the rest of the capsule are transparent. The boy lives in the country, and attends school regularly. Circumstances prevented his being able to remain in the city under observation, which may have been to his advantage. For four years this boy has had one piece of brass cap in the posterior remaining portion of capsule in one eye, and another piece in the anterior capsule of the other eye, and they still appear to produce no irritation. Incidentally, giant, or blasting, caps contain the very highest fulminate explosives, in comparison with which, for its concussion effect on the eyeball, dynamite is almost a plaything.

These cases are cited to show the necessity for a more reliable, positive method for removing a small, nonmagnetic foreign body from the lens.

With my associate, Dr. A. W. Morse, I removed, with a magnet, a piece of steel from the lens of a man. Then, when preparing to remove the major portion of the lens matter with a suction needle, I found another small foreign body remaining in the lens. When the needle is placed carefully over the speck, and suction is made very cautiously, there is sufficient lens matter adherent to maintain a vacuum, and the metal is thus kept clinging to the needle point, and is withdrawn with the needle. Three later cases have more fully demonstrated the efficiency of this method.

A small puncture is first made in the cornea with a knife. Through this the beveled, sharp pointed, aspirating needle is inserted into the lens, care being taken to have the hole in it cover the foreign body. It should be gently pressed into the lens matter so that a complete vacuum is obtained.

This method has the additional advantage of being able to extract two-thirds or more of the lens at one setting, after the foreign body has been removed, thus avoiding the complications resulting from the subsequent swelling. When an attempt is made to extract all the lens this way, there is much danger of including some vitreous with it; so one should err on the safer side. The remaining lens matter usually appears to take care of itself in time. I use a simple piston syringe connected with an aspirating needle by a short, pliable, rubber tube. However, any one can easily devise a more accurate mechanical suction needle with all the niceties of the most modern cataract suction machinery that may cover a much wider field of usefulness.

I do not advocate a wilful delay, but I do advocate cautious delay until one is fully convinced that one is adopting the wisest course that can be pursued in cases of penetrating injuries. Not infrequently, persons with penetrating injuries, though delayed for days in reaching the office, have fared as well as some who have received almost immediate attention.

ABSTRACT OF DISCUSSION

Dr. Arnold Knapp, New York: Foreign bodies in the lens present interesting problems, as, first of all, these injuries are unusual, their symptoms are somewhat peculiar, and the treatment depends on a number of factors. The chemical action of foreign bodies is different in the lens from that in other parts of the eye. The course depends on the oxidizing properties of the foreign body, though this chemical action is less when the foreign body is situated in the lens. Particles of iron in the lens produce siderosis, but this comes on later than in the case of the usual intra-ocular foreign body. It is best to remove the iron particle early, remembering that the development of the cataract may thereby be hastened. The removal

* Read before the Section on Ophthalmology at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June, 1924.

1. Donovan, J. A.: The Immediate Removal of Traumatic Cataract, J. A. M. A. 57: 196 (July 15) 1911.

of a foreign body and the simultaneous removal of an immature cataract may cause glaucoma or other complications, so that the operation should be made in two stages, withholding the cataract extraction until the lens is opaque. In cases of nonirritable, nonmagnetic foreign body, Dr. Donovan's advice to wait is sound. When the cataract is complete, the extraction of the two at once is then in order. I think that Dr. Donovan's procedure to prevent the escape of the foreign body during extraction is excellent, and should be of great value in certain cases. There are certain points in his procedure about which I am not clear. Does he wait for maturity of the cataract before applying the suction maneuver? What kind of needle does he use? And, finally, does he obtain a large enough opening in the capsule, with the needle puncture, to permit the ready extraction of the foreign particle?

DR. JOHN A. DONOVAN, Butte, Mont.: I make an incision with a little cataract knife just large enough to let the needle go in. The needle I use is about the same size as the needle used for spinal puncture. As to extracting the cataract, I have never had any trouble about extracting the lens with the needle. Formerly, in about one-half the cases I would get some vitreous, but now, by sucking out two-thirds or three-quarters of the lens matter, there is no danger to the vitreous. If I can see a minute, nonmagnetic foreign body in the lens I attempt to take it out at once with the needle. If I do not see it, I let it alone, and await developments. Unfortunately, there are children who find and explode giant caps in this careless manner. Once in a while, by simple, or combined extraction, in the regular way, one takes the entire lens out, and the foreign body comes with it; once in a while it does not, as the lens matter is very soft. With this method one sees what one is doing. In extracting the foreign body, the mouth of the needle faces it, but when extracting the lens, the mouth of the needle should be outward but well in the lens, so that one can watch the lens matter entering the needle, and thus keep complete control of the operation.

FIBROUS ANKYLOSIS OF THE HAND DUE TO PROLONGED SWELLING*

A. BRUCE GILL, M.D.
PHILADELPHIA

The hand is essentially a prehensile organ, and loss of the power to pick up objects, to grasp firmly and to execute fine movements constitutes its most common and most serious disability. Loss of function of the hand may be due to stiffness or ankylosis of the joints of the fingers; to imperfect or lost tendon action from adhesions or loss of tendon substance or contracture of muscles, such as Volkmann's contracture; to Dupuytren's and cicatricial contractures of fascia, and to lesions of nerves which supply the muscles of the hand and the forearm. Of these causes of acquired deformity and disability, the most common is the first, the limitation or absence of motion of the joints of the fingers due to conditions within or about the joints themselves. This stiffness and ankylosis may result from active joint disease, as in various types of arthritis, or from prolonged passive congestion and swelling of the hand caused by any lesion or condition anywhere in the upper extremity which interferes with the return circulation in veins and lymphatics.

A number of years ago, I observed that the disability of the hand which results from Colles' fracture consists almost invariably in stiffness of the fingers, which is due to fibrous ankylosis of the interphalangeal and metacarpophalangeal joints, often more marked in the latter. That the loss of function is not due to malalinement of the bones at the wrist, or to adhesions of tendons to callus at the site of fracture, may be proved by operation. The fibrous ankylosis of the fingers persists in anesthesia when all other causes of limitation of motion have been eliminated.

The appearance of such a hand is characteristic. Active and passive motion of the fingers—flexion and extension, abduction and adduction—is limited or absent. The fingers are fixed in extension or slight flexion. The skin is smooth and glossy, pale or bluish, and cool. There is a bluish color also beneath the nails. Swelling of the fingers and hands is often present for weeks and even months after the fracture. If, in conditions of long standing, the swelling has disappeared, there yet persists a thickening and an induration about the finger joints.

The same type of disabled hand has often been observed in other conditions than that of Colles' fracture. Fractures of the bones of the forearm or of any part of the humerus, dislocations of the elbow and of the shoulder, lacerated wounds and infections of the hand and forearm may likewise cause fibrous ankylosis of the fingers. And the one factor that is common in all is always the presence or the history of prolonged swelling of the hand. The conclusion seems obvious and inevitable that the swelling has been the cause of the loss of function.

The importance of this conclusion cannot be exaggerated. The disability, when fully established, is a very prolonged and even permanent one, as its cure is difficult or impossible. It prevents workmen from earning their livelihood and women from doing their household work. Of what advantage is it that a fracture in the upper extremity should unite, a dislocation be reduced, or an infection cured, if the hand is disabled? The arm is but a connection between the hand and the body, and is useful only as it enables the fingers to obey the commands of the brain.

Therefore, in all surgical lesions of the upper extremity, the physician should never neglect to observe always the condition and function of the hand, and to avoid or remedy any condition that is the cause of swelling and to combat by every possible means swelling when it is present.

In fractures at the wrist, the return circulation of the hand may be interfered with by internal pressure from overlapping of the fragments, hemorrhage within the tissues and inflammatory reaction, and by external pressure from splints, pads and bandages. Reduction, if deformity is present, should be accomplished under an anesthetic. If real reduction is secured, there is little, if any, tendency to spontaneous redisplacement, and any simple apparatus, such as a posterior wooden or plaster-of-Paris splint, will prevent recurrence of the deformity from violence. The same principle applies to other fractures near joints, where they are not spanned by the bellies of muscles. Anterior and posterior pads, which are commonly employed, are unnecessary and only tend by their pressure on the palmar and dorsal plexus of veins to cut off the return circulation. Their use is pernicious.

The return circulation in the extremities is secured largely by the pumping action of the muscles, as the arterial blood is pumped by the heart muscle. The splint, therefore, should not pass beyond the metacarpophalangeal joints, so that the patient from the very beginning may move his fingers in a normal manner. This will help to prevent swelling of the fingers and

* Read before the Section on Orthopedic Surgery at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June, 1924.

ankylosis of the joints. After a week, the splint should be shortened to allow moderate motion of the wrist.

Pringle [1] says:

> It is, however, to be kept in mind, always, that early movement of the fingers and wrist is absolutely essential, and that good useful hands result after Colles' fracture even where there has been no reduction of the deformity, provided the patient has been moving these joints all through the process of the union of the bone; and that in cases where admirable reduction has been brought about, and the parts kept rigidly splinted and immobile for several weeks, the hand is often quite, and usually is extremely, useless afterwards.

To this statement I heartily subscribe.

Swelling which is present or which develops should be vigorously combated by thorough daily baking, if this is possible, followed by massage of the fingers, hand and arm, while the fracture is guarded against injury. The hand should not be allowed to hang down, but should be carried in a sling or kept elevated in bed if necessary.

It may be said in passing, that it is a mistake to dress a Colles fracture with the hand deviated toward the ulnar side and the wrist flexed, as this is not necessary to maintain reduction, and as it simply obscures or conceals a deformity at the site of fracture if one is present. Likewise, in case of Pott's fracture, if the foot is put in supination or inversion, it is then impossible to see whether or not the astragalus has been replaced directly beneath the tibia, which is the point of supreme importance in treating this fracture. The same principles of treatment to prevent or eliminate swelling of the hand should be applied in all cases of fracture, dislocations, and wounds of the upper extremity.

Infections of the hand should be treated, in my opinion, as Willems treats infected joints. Sufficient drainage, no packing of incisions, constant active and passive movements of the fingers and no splinting of the hand, will lead to free expression of pus and prevent infection from traveling through the soft parts and along the tendons, will aid circulation, and will prevent or reduce swelling. If the fingers are kept moving, they will tend less to become ankylosed. Massage of the fingers should be frequent and thorough. Active hyperemia by baking or passive hyperemia by Bier's methods, preferably the former, in my opinion, should be employed if possible. Elevation of the part must not be neglected. Wide open drainage along the lines of the natural creases of the hand as far as possible, and then anything and everything to reduce swelling and keep the fingers in motion, are the important principles of treatment.

Correction of the deformity, when once it is established, is difficult. Forcible manipulation under an anesthetic is apt to do more harm than good, as it is not uncommonly followed by swelling of the joints that have been manipulated. If one is able, under an anesthetic, to flex the fingers, they usually snap back again into extension, once the force is released. Gradual flexion by means of a splint with elastics to the fingers, and thorough daily baking and message and gentle manipulation afford the best means for correction and restoration of function.

SUMMARY

1. Fibrous ankylosis of the fingers which is due to prolonged swelling is one of the most common acquired disabilities of the hand.

2. It may result from any fracture or dislocation in the upper extremity, and from extensive wounds and infections of the hand or forearm.

3. It presents the chief disability which results from Colles' fracture.

4. In any surgical lesion of the upper extremity, the condition of the hand must never be lost sight of. All things that tend to produce swelling must be eliminated so far as possible, and the swelling must be actively combated from the very beginning.

5. The deformity and disability is difficult of correction, and frequently disables the wage earner for long periods of time or even permanently.

6. Owing to the frequency and the disabling nature of this lesion, the importance of its prevention cannot be exaggerated. It is probably the one most important surgical condition of the hand.

1. Pringle, I. H.: Fractures and Their Treatment, New York, Oxford University Press, 1910.

ABSTRACT OF DISCUSSION

Dr. Barney Brooks, St. Louis: All of us see too frequently disabilities that are the result of the treatment for the disease rather than the result of the disease itself. Every practical suggestion Dr. Gill has made I second most heartily. I should be inclined to offer another interpretation of the theory he advances for the explanation of this stiffening of the fingers. Limitation of motion in the joints always follows lack of use. Swelling is usually present also, but may be absent. I was interested in this subject some years ago. Review of some experiments carried out, but never published, might be of interest. One extremity of an animal was fixed in plaster for a period of three weeks, and specimens of fascia, tendons and ligaments of both extremities were excised, and the coefficient of elasticity was determined. It was found that a strip of normal connective tissue stretched approximately uniformly under an increasing load, and on removal of the load contracted to its original length. Corresponding strips of fascia from the extremity, which had been kept motionless for three weeks, did not stretch uniformly under increasing tension. More tension was required to produce a given amount of stretch when the load was small. On increasing the load, a point would be reached when the fascia strip would give way rather suddenly. It would never return to its original length on removal of the load that was stretching it. I believe that the fixation of a joint which results from inactivity is the result of changes in the physical characteristics of the elastic tissues about the joint.

Dr. Robert T. Morris, New York: If a patient comes with a disabled hand, the skin glossy and thin, one may still obtain first rate results after two years of treatment. An old method of treatment that most of us have forgotten about is the empiric hyperemia developed before we knew anything about Bier's hyperemia. The hand is plunged into water as hot as can be borne for a moment, then into very cold water for a moment, and the procedure is repeated. This, kept up for ten minutes morning and night, will produce remarkably good results if associated with the treatment outlined by Dr. Gill. Here is a new point: First, we must break up adhesions. The point that Dr. Brooks brought out is extremely important, but some of the stiffness is due to interstitial infiltrate in irritated contracting connective tissue. We should unload interstitial infiltrate and introduce a joint lubricant. If we break up adhesions under an anesthetic and introduce a lubricant into the joints, we shall accomplish a great deal more. The lubricant that I use consists of 1 part of boroglycerid, 3 parts of glycerin and 4 parts of isotonic salt solution. This forms a lubricant that is not readily absorbed for the reason that it is hygroscopic and draws fluid toward itself and will remain in the joint for a long time. I have found that it remained in the knee joint several weeks. I use this lubricant chiefly for the larger joints, but have carried it into the hand, into the carpal joints and into the phalangeal joints occasionally. Now then, if we break up the adhesions under an anesthetic and then wait

two or three days for the immediate inflammatory reaction to subside and inject this lubricating fluid; if, in addition we continue with the use of hyperemia, or old fashioned hydrotherapeutic method, and carry on the rest of the treatment as described by Dr. Gill and Dr. Brooks, we shall at the end of a year or two or three, perhaps, get a very good hand out of one that seemed hopeless. If there is danger of breaking phalanges when trying to break adhesions, one may use a narrow chisel. One should chisel the phalanges apart, put on a protective dressing for three or four days before making passive motion, and then later introduce the lubricating fluid. Under these circumstances we may not feel discouraged when these cases of disabled hands come to us. It is merely a question of telling the patient outright that much time must be expended, with the patient's cooperation; but the result is likely to be first rate.

DR. KELLOGG SPEED, Chicago: In some ways I disagree with what has been said. These problems of thickening may be due to several causes, and it seems to me that the preceding speakers have viewed the problem more from the standpoint of the joint than from that of the capsule. I should like to see some of those joints that were chiseled apart and injected with boroglycerid solution and then became freely movable joints in a year or two, or five or ten years. I believe that most of the thickening is caused by changes described by Dr. Brooks, by a loss of elasticity, also by real histologic changes that occur in the fibrous capsule, with consequent shrinking in size of the joint, so that its capacity is very much reduced. That, along with periarticular thickening and lack of use, leads to the intense stiffness. As far as passive motion is concerned, one has to start toward cure by passive motion; but it seems to me that the more I play with stiff joints, the more I feel we should rely on active motions and the patient should be encouraged to do his own motions once the process has been started.

DR. WALTER G. STERN, Cleveland: If the fibrous ankylosis in the knuckle joint is due to a shrinkage of the capsule, and after physiotherapy has failed to relieve the condition, we have one arrow left in our quiver, capsulotomy, which has given me many excellent results. It is a simple operation; one makes an incision over the knuckle, pulling the tendons to one side, and cuts through the periosteum transversely just above the joint. It is really continuous, as the capsule; and then by bending the finger, the periosteum and capsule loosen up and the finger can be flexed, and the trouble has no further tendency to return. After the operation, the fingers are fixed in a flexed position for a suitable length of time, and physiotherapy is employed. I think that one of the good results mentioned by the previous speaker was due to the fact that he cut the posterior part of the capsule, and this allowed the knuckle to become bent.

DR. WILLIS C. CAMPBELL, Memphis, Tenn.: I desire to refer particularly to Colles' fracture and to urge the necessity of perfect reduction. While it is quite true that deformity is compatible with good function, a much greater number of unreduced Colles' fractures are followed by pain, swelling and fibrositis, than in those that have had satisfactory replacement. I have repeatedly observed cessation of pain and disability as the result of open or closed reduction after union had been secured. Under no circumstances should the fingers be included in the splint, plaster or other dressing; and they should be given active motion early and continuous. This may appear elementary to members of this section, but cases are not infrequently seen in which such measures have been instituted. I have employed capsulotomy in a number of cases, but with disappointing results.

DR. H. R. ALLEN, Indianapolis: If soft tissues limit joint action, it is probably the white fibrous tissue that is to blame. Textbooks tell us that this tissue is "inelastic." With this I agree, but I cannot comprehend why its other mechanical properties remain unmentioned. This tissue is slowly ductile. It is also slowly absorbable. In other words, it is inelastic adaptive tissue, and it exists throughout the body, so that its properties are of some importance. Every clubfoot and every case of infantile paralysis demonstrates these three qualities of white fibrous tissue. Some time before the war, I brought out a system of readaptation of this tissue. It can be found in every government hospital. Dentists use a red gum for making negative impressions of teeth and gums. They warm this gum in warm water until it is sufficiently plastic to receive impressions. It is then hardened by cool water. This gum was used on the handles of tools and on knives and forks, enabling patients to work and to feed themselves when it was impossible to grasp or to hold instruments in their hands without it. As use improved their grasp, the gum was reheated and cooled to meet their progress. Dr. Speed hit the nail on the head when he said, "It is the use of the tissues that will restore the hand ultimately." In more awkward language, permit me to suggest that we are to use use for useful results. On this last idea, the counterpart of the red gum handles depends. So one should not forget the elastic gelatin pad that is an important part of this treatment. Its success is in proportion to our normal obstinacy and resentfulness to physical restrictions. By making a well fitting elastic palmar pad, the fingers are forced slightly beyond their normal, lazy angle of rest. They resent this position and are forever working against it. The patient is unconsciously treating himself, and his own obstinacy is used for the commendable purpose of making his hands useful.

DR. A. BRUCE GILL, Philadelphia: This discussion has dealt with the theory of the etiology and with the methods of treatment of this condition. The object of my paper, on the other hand, was rather to call attention to this serious disability and to the means of its prevention. I did not enter into the theory of causation of fibrous ankylosis of the hand, because I am not altogether sure of the details of its pathology; but I wish to point out that all my experience over a number of years has established the fact that prolonged swelling of the hand has always been present, whether the injury was one of the hand, wrist, elbow or shoulder. I have presumed that the swelling was a sign of edema, exudate, and infiltration of tissues which have led to the fibrous ankylosis. I do not believe that fixation alone accounts for the condition. Whether or not infiltration about the nerves and essential muscles of the hand plays a part in the final result. I do not know. I think it possible. Experimental work to establish definitely the pathology would be most welcome. From the discussion as to the treatment of this condition, we may gather from the variety of methods which have been mentioned, and from the difference of opinion which apparently exists, that there is no universally satisfactory method of restoring early function to these disabled hands. It is much easier to prevent this condition than to cure it.

MODERN METHODS AND RESULTS OF TREATING MALIGNANCY OF THE BLADDER *

HERMON C. BUMPUS, JR., M.D.
ROCHESTER, MINN.

A perusal of the literature or of statistics relative to malignancy of the bladder inevitably leaves the reviewer with three major impressions: (1) the lack of a uniformity in the classification of tumors of the bladder; (2) the variety of methods employed in their treatment, and (3) the depressingly poor results obtained.

Improvement in classification is essential before the value of any method of treatment can be determined. It is obvious that no deductions of value are possible so long as various investigators report their cases under entirely different classifications. Not until a uniform nomenclature has been adopted can the best type of treatment be selected and the final results from such treatment improve.

The present confusion with regard to classification is best appreciated after a review of some of the recent

* From the Section on Urology, Mayo Clinic.
* Read before the Section on Urology at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June, 1924.

reports on malignancy of the bladder. Kidd [1] refers to simple papillomas, inflammatory papillomas, true papillomas, simple primary papillomas, malignant papillomas, early carcinoma and carcinoma. Bugbee's [2] report of nineteen cases comprises thirteen infiltrating carcinomas, one infiltrating papillary growth, one papillary growth, one papilloma and three malignant papillomas. Barringer,[3] in a report of twenty-one cases, includes one papillary infiltrating carcinoma, two papillary carcinomas, five infiltrating carcinomas, one epidermoid carcinoma, two papillomas, one squamous infiltrating carcinoma and three carcinomas. Geraghty [4] describes benign papilloma, malignant papilloma, papillary carcinoma, scirrhous carcinoma, squamous cell carcinoma and adenocarcinoma.

This galaxy of terms is, of course, the result of an endeavor of the various authors to describe the different degrees of malignancy present in tumors of the bladder. But it would seem that the endeavor had resulted, not in clarity, but in confusion. For this reason the Section on Urology of the Mayo Clinic has for some time ceased to classify the epithelial tumors of the bladder grossly, and instead has adopted the classification advocated by Broders,[5] who asserts that a neoplasm can accomplish only what its cells can accomplish; if its cells are active, it is active. A neoplasm may be papillary and of a low degree of malignancy, or it may be papillary and of a high degree of malignancy. It may be flat or ulcerated and of a high degree of malignancy, or it may be flat or ulcerated and of a low degree of malignancy. Epitheliomas of the bladder, microscopically, often resemble the normal folds of the bladder epithelium. Often they are composed of slender cells which resemble those of the basal layer; they also contain polyhedral cells resembling those of the upper layer. The grading of epitheliomas of the bladder depends on the proportion of these cells in the neoplasm compared with the spherical and the irregular cells with prominent nucleoli (undifferentiated cells). If about three fourths of the epithelioma is differentiated epithelium, and one fourth is undifferentiated, it is graded 1 on a scale of 1 to 4; if the differentiated and undifferentiated epithelium is about equal, it is graded 2; if the undifferentiated epithelium forms about three fourths of the growth, and the differentiated one fourth, it is graded 3, and if there is no tendency to cell differentiation, it is graded 4.

Of the 527 cases of tumor of the bladder examined at the Mayo Clinic between January, 1915, and January, 1924, seventy-five were so far advanced, or the patient was in such poor physical condition that no form of treatment was attempted, although in twenty-six cases an exploratory cystostomy was performed before hope of surgical removal was abandoned. I have used these seventy-five cases as a basis of comparison to ascertain the benefits from various forms of treatment. The average duration of the disease in the fifty-one untreated cases, traced from the time of examination to death, was 10.64 months, and from the onset of the disease to death, 2.71 years. Seven patients lived more than one year; two of these lived more than five years, which illustrates that in any large group of malignant cases, patients may occasionally live for a number of years, harboring malignancy, and when some form of treatment is applied it may erroneously receive the credit. Any type of treatment, to be successful, must obviously surpass the results in the untreated cases, and more than an occasional patient must live over five years.

FULGURATION

Fulguration was employed in eighty-four (15.93 per cent.) of the 527 cases in the series. These were tumors of a low degree of malignancy, usually referred to as benign, but classified here as Grade 1 or 2. Such tumors are potentially malignant, and if allowed to grow unchecked may become large enough to cause the death of the host, and hence are classified as malignant. Recurrence is common even in such low degrees of malignancy; it occurred once in sixteen cases; twice in four cases; three times in five cases; four times in three cases; six times in one case, and seven times in one case of the series, a total of 35 per cent. of recurrences, agreeing with an earlier series reported by Braasch [6] of 27 per cent., and showing the importance of a careful follow-up of cases in connection with any modern method of treating malignancy of the bladder. That the incidence of recurrence increases with the degree of malignancy is also illustrated by this group. In thirty-eight cases, the extent of the tumor being greater than usual, or the degree of malignancy greater, usually Grade 2, radium was applied in addition to the fulguration. The dose was usually approximately 600 milligram hours, varying with the extent of the tumor, and given in emanation-bearing tubes. There were eighteen recurrences, four following the removal of tumors of Grade 2. Half of these recurred but once, readily responding to the second fulguration. The importance of having such patients return at regular intervals following treatment cannot be too strongly emphasized. Crenshaw [7] has described the method followed in the Section on Urology of the Mayo Clinic, and since its adoption it has been observed, as Braasch [6] pointed out, that tumors which at the time of their removal were of a high degree of malignancy, on recurrence, frequently respond favorably to fulguration. Similar observations have been reported by others.

RADIUM

Radium treatment alone, or in conjunction with some other form of treatment, was employed in 212 cases. It was used with fulguration in thirty-eight; with cystostomy in forty-six; with excision or resection in seventy-eight; with cautery in sixteen, and alone in thirty-four. I have referred to its use in conjunction with fulguration. I believe that it not only lessens recurrences, but also acts as a hemostatic and prevents bleeding when the slough following the fulguration comes away, a point in the use of radium which, I believe, is not generally appreciated. A marked endarteritis is produced, and when a briskly bleeding tumor of the bladder is subjected to a palliative dose of a few hundred milligram hours, the results relative to hematuria are sometimes most gratifying.

When radium was employed through the cystoscope or with cystostomy, various methods of application were used. In some, a tube of radium salt was applied

1. Kidd, F.: On the Treatment of Epithelial Tumours of the Urinary Bladder, Lancet **1**: 523 (March 17), 582 (March 24), 636 (March 31) 1923.
2. Bugbee, H. G.: Report of Cases of Malignant Growths of the Bladder Treated by Resection and Radium, Tr. Am. A. Genito-Urin. Surg. **15**: 393-412, 1922.
3. Barringer, B. S.: Technique and Statistics in the Treatment of Carcinoma of the Bladder by Radium, Am. J. Roentgenol. **9**: 757-764 (Nov.) 1922.
4. Geraghty, J. T.: Tumors of the Bladder, in Cabot, Hugh: Modern Urology, Ed. 2, Philadelphia, Lea and Febiger **2**: 197-254, 1924.
5. Broders, A. C.: Epithelioma of the Genito-Urinary Organs, Ann. Surg. **75**: 574-604 (May) 1922.
6. Braasch, W. F.: Tumors of the Bladder and Their Nonoperative Treatment, Minnesota Med. **1**: 168-174 (July) 1918.
7. Crenshaw, J. L.: The Follow-Up Record in Cases of Tumor of the Bladder, J. Urol. **5**: 211-213 (March) 1921.

directly to the growth; in others, radium-bearing needles were implanted in it, and, in many, emanation-bearing seeds, containing usually in the neighborhood of 1 millicurie, were implanted at approximately 1 cm. intervals. Thirty-four patients were treated by radium application alone; five died immediately following treatment, or as a result of it a few weeks later. This mortality of 14.70 per cent. illustrates that the application of radium is not without grave risk, and therefore should not be employed unless there is very definite evidence of possible benefit; for, if a sufficient dose is given to destroy the growth, toxic absorption will result, and patients with poor renal function will succumb. To give a smaller amount seems irrational, and to give repeated doses invites sloughs and vesical fistulas, since, after the first dose, the endarteritis that is produced, together with the fibrosis, renders the area avascular and greatly enhances the chances of fistula formation. Delay also gives opportunity for the development of further malignancy. These patients received an average of approximately 2,000 milligram hours, varying according to the size of the growth. Of the nineteen patients treated, thirteen are dead; six are living, none over three years. The average duration of life from the onset of the disease to the death of the patient was 2.86 years, approximately the same as though no form of treatment had been used.

RADIUM WITH CYSTOSTOMY

Forty-six patients were treated by opening the bladder and applying directly an average of 1,300 milligram hours of radium emanation. Opening the bladder permits greater accuracy of application and should, therefore, produce better results. Five patients died within a month after the operation, as a result either of the surgical procedure or of the radium. This mortality of 10.86 per cent. is approximately one-third higher than when cystostomy alone is employed, the mortality following the latter procedure being 7.69 per cent. The average length of life following operation in these cases was but a few months longer than in those in which exploratory cystostomy was performed. Of the twenty-nine patients who died, only four lived more than a year; and of the four living, none has lived a year. If a tumor is too extensive to be removed surgically, it is evidently better not to apply radium, as the mortality is greater than the operative mortality, and the life of the patient is not lengthened.

CAUTERY, AND THE CAUTERY AND RADIUM

Tumors of the bladder of a low grade of malignancy (Grades 1 and 2), yet too extensive to be treated by fulguration, are often encountered. These are often multiple, and thus resection or excision is undesirable. The extent or position of the tumors may be such that surgical procedures will leave the bladder with a much lessened capacity. In such cases, the cautery is the most satisfactory form of treatment. It does not result in appreciably diminished capacity of the bladder, and the operative risk is much less. It was used in thirty-two cases, with three deaths. Eleven of the patients are alive; one, nine years; two, six years; three, five years; one, four years; two, two years, and two, more than one year. That the cautery is not applicable to tumors of advanced grades of malignancy is shown by the fact that two of the three patients who died had Grade 3 malignancy (the tumor in the third case was not graded), and of the five patients with higher degrees of malignancy so treated, not one is alive.

Sixteen patients were treated with radium and the cautery. There was one operative death; the patient had Grade 3 malignancy. Four were given radium prior to the operation by cautery. Nine patients were given radium during the operation, and three subsequently. Six of the nine are dead, only one having lived more than one year. One of the three living patients has lived seven years, one has lived one year and three months, and one has lived eight months. All had tumors of Grade 2 malignancy. The use of radium with the cautery evidently does not improve results.

SURGERY AND RADIUM

Seventy-eight patients were given radium besides having resection or excision; there were five operative deaths, a mortality of 6.41 per cent. In ten instances, the radium was applied through the cystoscope, one or two weeks before operation. Approximately 1,000 milligram hours were given by means of emanation-bearing seeds. It was hoped that this preoperative exposure of the tumor to radium emanation, as described by Scholl,[8] would render the malignant cells incapable of reproduction, and so prevent the implantation of small groups of tumor cells in the denuded surfaces at the time of operation. Two of the patients died shortly after operation, and it was felt that the systematic radium reaction, which was probably at its height at this critical postoperative period, was partly responsible for the mortality. A more definite contraindication, however, was the edema and local reaction in the bladder, which made it impossible to determine the exact extent of the malignancy at the time of the resection. This has led to an axiom which seems applicable to malignancy in general. If neoplasms have been treated by radium, the treatment should not later be changed to surgery, because the results by radium have not been satisfactory or because they were better than expected.

Radium was given to twenty-five patients during the operation or immediately following it. During the operation it was placed at the point where the tumor was excised, or near the suture line, if it was resected. There were three operative deaths. Twenty of the remaining twenty-two patients have been traced; thirteen have been dead an average of one year after operation; seven are alive; three of these had received radium emanations at the time of operation, and in none had the malignancy recurred. The other four living patients received radium immediately following operation. One patient had a recurrence during the first year, but has now lived five years since operation. The three other patients have lived approximately four years each.

Radium, given during operation or immediately following it, does not increase the mortality rate and seems definitely to lessen the percentage of recurrences. It is particularly applicable in cases in which the surgeon is not certain that he has excised beyond the boundaries of the growth. If the excision has been beyond this point, the use of radium would seem unnecessary and contraindicated, for it delays healing, produces a general systemic reaction, and leaves the patient with an intractable cystitis for many months.

The remaining forty-three patients were given radium treatment for recurrences during the succeeding years. The fact that ten patients, approximately one fourth, are still living, and as a group average over four years of postoperative life, shows the value of radium applied in this manner as an adjunct to surgery.

8. Scholl, A. J., Jr.: Squamous-Cell Carcinoma of Urinary Bladder, Arch. Surg. 3: 336 (Sept.) 1921.

Of the seventy-eight patients who received radium either before, during or after operation, sixty-two have been traced; twenty-two (35.48 per cent.) are alive; four lived five years; seven, four years; four, more than three years; three, more than two years, and four, more than one year, the average being 3.42 years since operation. The total duration of life of the patients since their first symptoms averages 5.2 years, more than twice that of the seventy-five patients who received no form of treatment.

TREATMENT BY EXCISION OR RESECTION

Two hundred and forty patients, including the seventy-eight just discussed, were submitted to excision or resection. There were twenty-seven operative deaths, a mortality rate of 11.25 per cent. One hundred and ninety-six of the patients have been traced; 105 (53 per cent.) are alive; three of these have lived six years; nine, five years; fourteen, four years; sixteen, three years; sixteen, two years; thirty-four, one year, and thirteen, less than one year. Of the ninety-one dead, sixty-nine (75.82 per cent.) died during the first two years following operation. If patients live into the third year after operation, they have a good chance of ultimate cure. The location of the growth has a decided bearing on the operative risk because of technical difficulties, but it does not seem to affect the average duration of postoperative life, since patients from whom the growth was removed from the dome or lateral walls do not have an average longer postoperative life than if the growth were situated in the base.

Contrary to the usual opinion that there is a high percentage of early recurrence and death in young adults operated on for tumors of the bladder, these patients have a comparatively good chance for ultimate recovery. Patients in the third decade live as long on an average as those in any other decade but the fifth. Recovery occurs most often between the fortieth and fiftieth years, when the lymphatics are not so active, and the patient still has the robust health and resistance of middle age.

The most important factor with regard to prognosis is the degree of malignancy. One hundred and sixty-six of the 196 patients treated surgically who were traced had tumors graded according to Broders as follows: Twelve were of Grade 1 malignancy; two of these patients died in the hospital; nine are living, and one is dead. Fifty-six were of Grade 2 malignancy; nine patients died following operation; thirty-one are alive, and fourteen are dead. Seventy-three were of Grade 3 malignancy; ten patients died following operation; twenty-seven are alive, and thirty-seven are dead. Twenty-five were of Grade 4 malignancy; one patient died at operation; eleven are living, and thirteen are dead. If the patients are placed in two groups, there are sixty-eight with a low grade of malignancy (Grades 1 and 2), a ratio of forty living to fifteen dead, or about three to one; and there are ninety-eight patients with high degrees of malignancy (Grades 3 and 4), a ratio of thirty-eight living to fifty dead, or one to one and one-third. Such ratios are unrefutable evidence that the degree of malignancy, as graded by Broders, mainly determines the results of any modern method of treating malignancy of the bladder.

CONCLUSIONS

1. A simplified classification of tumors of the bladder is to be desired. Broder's grading of malignancy constitutes a reliable and useful simplification.

2. Reexamination of patients who have been treated for tumor of the bladder is necessary because of the high incidence of recurrence following all types of treatment.

3. Radium alone in the treatment of malignancy of the bladder is not successful in cases in which other methods of treatment cannot be used.

4. Radium is most useful in association with fulguration or operation.

5. Radium treatment followed by operation produces poor results. If radium has been applied to malignant growths, the treatment should not be changed later to surgery.

6. Tumors of a low degree of malignancy that are too extensive to fulgurate or excise are best treated by cautery. Cautery is not applicable to tumors of higher degrees of malignancy; they should be treated by excision or resection.

7. The degree of malignancy of the tumor is the greatest factor in determining the final results of any type of treatment.

DIATHERMY IN UROLOGY*

PRELIMINARY REPORT

H. W. E. WALTHER, M.D.
AND
C. L. PEACOCK, M.D.
NEW ORLEANS

Electrotherapy has enjoyed little popularity with the medical profession. Its association with fraud and quackery, along with the strict limitations of the older type of apparatus, has done much to hinder its progress. Those who have been least disposed to credit any merit whatever to medical electricity must concede that, in diathermy, as employed with the newer type of apparatus, we have an agent whose potentialities for good have been but half developed. And in no branch of medicine is there a more fruitful field for its employment than in urology.

Diathermy is the production of heat within the tissues of the body, not heat forced in. It is the formation of heat between two electrodes of a high frequency machine, due to the resistance encountered by the passing of an electric current through living cells of the body, from one electrode to the other. The current is of such high oscillation as to cause no contracture of muscle, nor does it produce shock.

Diathermy may be either surgical or medical. A description of the currents used, the method of their production, and the construction of high frequency apparatus will not be entered into here. This can be obtained from textbooks on the subject. The d'Arsonval or bipolar current has been used in the cases here reported. It is a current of high frequency, high amperage and relatively low voltage.

Surgical diathermy, or electrocoagulation, is simply a cooking process obtained by placing one large electrode on some part of the body, foreign to the part to be treated, and a much smaller electrode (varying from a pinpoint to the size of a quarter) on the part to be destroyed. The passage of current at the smaller electrode is so great as to generate heat sufficient to cook or

* From the fifth urological division of Charity Hospital and the urological service of Hotel Dieu.
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coagulate tissue cells. This not only occurs at the point of surface contact but also penetrates much deeper, the degree depending on the amount of current used, the length of time applied and the size of electrode employed. In surgical diathermy, we have an agent for destroying new growths that is bloodless, prompt, clean and accurate; produces no shock; minimizes danger of metastasis and likelihood of recurrence; induces a rapid convalescence, and gives good cosmetic results.

Medical diathermy is subdivided into sedative and stimulative, the former alone being applicable to urology. August Bier was the first to direct attention to the relieving of pain and other beneficent effects of heat. Before the World War, our efforts were practically limited to surface heat, either conductive or convective. During the war, appreciable progress was made in the construction and perfecting of high frequency machines. This effort has continued up to the present, when we have at our command, in conversive heat, one of the most useful therapeutic additions to medicine. One has only to read Sampson's [1] exposition of sedative diathermy to realize the results obtainable from the production of heat in the deeper tissues of the body. Sedative diathermy produces an active hyperemia, stimulates phagocytosis and revitalizes tissue cells. The dilatation of the venous capillaries and the bringing of more arterial blood to the part, with the increased flow of lymph, greatly benefits inflammation.

It was Doyen who, in 1907, first advocated electrocoagulation for destroying tumors. Nagelschmidt, in 1908, presented adequate apparatus for doing this work, and at this time coined the term diathermy. In 1910, Beer [2] announced that neoplasms of the urinary bladder could be destroyed with a high frequency current introduced through the cystoscope in a water-distended viscus. Kidd,[3] Kolischer,[4] Schmidt,[5] Thompson and Iredell,[6] Corbus [7] and others have added materially to our knowledge concerning diathermy in urologic surgery. Von Büben [8] reported fifty cases of bladder disease in females treated by medical diathermy in the women's clinic of the University of Budapest. His series includes various types of intractable cystitis and enuresis in which pain was relieved in every instance, and in which the infectious cases (apart from vesical tuberculosis) were decidedly improved. Le Fur's [9] experience with medical diathermy in lesions of the urethra, bladder and ureter has been uniformly encouraging. Roucayrol [10] asserts that endo-urethral diathermy (medical) promptly cured obstinate infections in the glands of Littré and in Morgagni's lacunae; with a vaginal thermophore, he cured affected cervical glands, vulvar follicles and Skene and Bartholin gland infections.

Cumberbatch and Robinson,[11] in their service at St. Bartholomew's Hospital, used medical diathermy in twenty-six cases of epididymitis, twenty-five cases of arthritis and sixteen cases of urethritis with excellent results. These investigators feel that convincing proof of the therapeutic power of diathermy in gonococcal infection was furnished by the disappearance of pain and swelling from the joints or the scrotum after the application of treatment solely to the site of the original infection; i. e., the prostate, seminal vesicle or cervix. Walker [12] lauds surgical diathermy in bladder papilloma, incarcerated vesical (diverticular) and ureteral calculi, and medical diathermy in gonococcal infections and in prostatic conditions in the aged which preclude surgical relief. Corbus and O'Conor [13] recently reported thirty-five cases of gonococcal endocervicitis treated with medical diathermy of which they were able to follow up twenty-two. The fewest treatments given any individual case for cure were four; the most, fourteen. The cervical thermophore devised by Corbus, with a thermometer passing through its core for registering the temperature of the electrode, has proved most satisfactory to us in the limited number of cases in which we have had opportunity to try it. Fowler, Kennedy and Burnell,[14] in discussing medical diathermy in gonococcal endocervicitis before the Australasian Medical Congress at Melbourne, spoke most enthusiastically about the results obtained with this new method of treatment.

We make this preliminary report on seventy-three urologic cases treated by diathermy, either medical or surgical, during a period of twelve months ending June 1, 1924. In the series there were eleven cases of bladder tumor, fifteen cases of tumor of the urethra, fifteen lesions of the external genitals (including chancroid, granuloma and warts), three cases of gonococcal endocervicitis, twenty-five cases of gonococcal epididymitis, one case of orchitis complicating mumps, and three cases of gonococcal arthritis.

Our experimental work with sedative diathermy in the treatment of prostatitis and seminal vesiculitis is not included in this report because of our failure to get uniform results. We feel that we can attribute negative results, in a large measure, to the fact that our work has been done with a portable unit. It is obvious to most persons that this type of machine, while equal to the usual needs of the urologist, does not deliver sufficient voltage to carry through structures as dense as the prostate gland. This applies equally well for the technic in treating the larger joints, the urinary bladder and the kidneys. We hope, later, to report our results in this class of cases, using a machine of higher voltage.

BLADDER TUMORS

CASES 1, 2 and 3.—These three cases were advanced carcinoma of the bladder in which suprapubic cystotomy was imperative in an effort to control hemorrhage. Surgical diathermy was given to the tumor masses, with a button electrode and a current up to about 3,200 milliamperes. This was followed by the insertion of needles of radium element into the tumor bases. Hemorrhage ceased following diathermy, and did not recur. The patients all succumbed from metastases, nine months being the average duration of life after they were seen by us.

CASE 4.—The patient, suffering from advanced carcinoma of bladder with marked hematuria, was given one treatment

1. Sampson, C. M.: Physiotherapy Technique, St. Louis, C. V. Mosby Company, 1923.
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7. Corbus, B. C.: Diathermy in Treatment of Tumors of Lower Urinary Tract, J. Urol. **2**: 203-215 (March) 1923.
8. Von Büben, L.: Thermopenetration in the Therapy of Female Bladder Diseases, Deutsch. med. Wchnschr. **48**: 1643 (Dec. 8) 1922. Zentralbl. f. Gynäk. **46**: 1145-1149 (July 15) 1922.
9. Le Fur, R.: Diathermy in Urology, Bull. méd. **36**: 5-9, 1922.
10. Roucayrol, E.: Endo-urethral and endovaginal diathermy, Paris méd. **12**: 545-551 (Dec. 16) 1922; J. d'urol. méd. et chir. **14**: 385-408 (Nov.) 1922.
11. Cumberbatch, E. P., and Robinson, C. A.: Treatment of Gonococcal Infection by Diathermy, Brit. M. J. **2**: 54-56 (July 14) 1923.
12. Walker, K. M.: Diathermy in Genito-Urinary Practice, Practitioner **108**: 192-202, 1914.
13. Corbus, B. C., and O'Conor, V. J.: Treatment of Gonorrheal Endocervicitis by Heat, Surg., Gynec. & Obst. **38**: 119-123 (Jan.) 1924.
14. Fowler, R.; Kennedy, J., and Burnell, G. H.: Discussion on Diathermy in Gonorrhea in Women, M. J. Australia **2**: 585, 1923.

with surgical diathermy through a cystoscope to control the hemorrhage; 200 milliamperes were given for ten minutes. Involvement of the contiguous organs was so advanced as to preclude anything further. Bleeding stopped promptly. Death from metastases occurred within six weeks.

CASE 5.—A white man, aged 29, who complained of hematuria and bleeding off and on for ten years, but who had had no previous cystoscopy, on examination revealed a tumor the size of a walnut, pedunculated, arising from the left bladder wall, and clinically diagnosed as papilloma. He received five treatments with surgical diathermy through a cystoscope, with a current up to 250 milliamperes, for ten minutes, at weekly intervals. After three months, a final treatment of diathermy was given to the remnant of the pedicle. At the end of nine months, there was no evidence of recurrence, and the urine was free from infection. The patient reports for cystoscopy every three months.

CASE 6.—A white man, aged 40, complaining of hematuria of six month's duration, on cystoscopy revealed a papilloma in the bas fond occupying about one-fifth the area of the vesical mucosa. Three surgical diathermy treatments were given, with a current up to 150 milliamperes, and of ten minutes' application, at weekly intervals. Two treatments were given later, at monthly intervals. The last cystoscopy, three months after the institution of diathermy, showed no tumor, but the mucosa over the area of the base was not entirely clean. The patient is still under observation.

CASE 7.—A white man, aged 45, who complained of hematuria of three months' duration, diagnosed two weeks previously by another urologist, at which time an unsuccessful attempt was made to fulgurate, received three surgical diathermy treatments biweekly through a cystoscope, with a current up to 200 milliamperes. The two last cystoscopic examinations, made at three month intervals, failed to reveal recurrence.

CASE 8.—A white man, aged 48, complaining of hematuria for the preceding three weeks, had two treatments at another clinic with no secession of blood. Cystoscopy revealed a tumor the size of a walnut on the right lateral bladder wall. Two surgical diathermy treatments, with a current up to 250 milliamperes, were given, ten days apart, with a disappearance of the mass. The patient failed to return for observation.

CASE 9.—A white woman, aged 41, complaining of hematuria of seven years' standing, on cystoscopy revealed a papilloma the size of a marble just behind the right ureteral ostium. Two treatments with surgical diathermy were given, at weekly intervals, with a current up to 200 milliamperes. There was complete disappearance of the tumor. The patient is still under observation.

CASE 10.—A white man, aged 33, who had suffered from hematuria periodically for seven years, received two high frequency cauterizations through a cystoscope to a tumor on the right lateral bladder wall, in 1922. At the time, the growth was the size of a small marble. The patient then deserted. He returned in 1924, with a tumor the size of a walnut, bleeding profusely. Three surgical diathermy applications, of ten minutes each, at weekly intervals, with 150 milliamperes current, have totally destroyed the growth. The patient is still under our care, the last diathermy treatment having been given only three weeks ago.

CASE 11.—A white man, aged 52, with hematuria for only one week, had a tumor on the left lateral bladder wall the size of a marble, revealed by cystoscopy. Two surgical diathermy treatments were given at weekly intervals, with 250 milliamperes current. The growth was practically destroyed. The patient was asked to report back for cystoscopy, but failed to do so; therefore, the result remains indeterminate at present.

For treating primary papilloma of the bladder, surgical diathermy has no equal. In our opinion, it offers as much relief to malignant conditions in this viscus as any other one agent. In the latter cases, by means of the open operation, growths can be thoroughly cooked out with surgical diathermy.

In our series of eleven bladder tumor cases, four were so far advanced that cystotomy, surgical diathermy and radium were used principally to check hemorrhage and relieve pain. The other seven responded promptly to diathermy. These cases must be kept under surveillance for at least five years before cure can be announced. In the interim, the patients should be subjected to cystoscopy at least once every three months.

TUMORS OF THE URETHRA

CASE 12.—A white man, aged 21, complained of having to strain a good deal in order to void urine, this condition having been present for about six months. There was no hematuria. Cystoscopy and ureteral catheterization revealed a *Bacillus coli* pyelonephritis of both kidneys; cysto-urethroscopy showed a multiple papilloma of the posterior urethra. Three applications of surgical diathermy through the cysto-urethroscope of McCarthy destroyed the growths, and the patient then voided freely. Lavage with silver nitrate soon cleared up the bilateral kidney infection.

CASES 13 to 26.—For brevity, fourteen cases of papilloma of the female urethra, occurring either at the meatus or within the first inch of the urethra, will be dealt with collectively. All tumors in this series were found to be histologically benign. The ages of the patients ranged from 16 to 65. All complained of frequency, many of pain on physical contact, and fully half of slight blood at times. Surgical diathermy treatments were given, the applications being made with a small electrode devised for tonsil work, with a current of from 50 to 100 milliamperes, for only a few seconds to each tumor. The number of the applications varied from one to five, with complete relief of the symptoms. One patient developed partial incontinence following infection from neighboring lesions; the condition is now under control. In another case, presenting marked tumefaction and discoloration, a slough in the urethral floor following surgical diathermy left an artificial opening into the vagina one-half inch behind the meatus. It could not be definitely ascertained whether or not this was present prior to the treatment, owing to the swelling of the parts.

Tumors of the urethra in the male can be treated as expeditiously with surgical diathermy through the McCarthy cysto-urethroscope as can tumors of the bladder through a cystoscope. We feel that tumors of the meatus urinarius and urethra in the female are being overlooked far too frequently by physicians. Among the factors producing symptoms of "bladder trouble" in women, we would place papilloma of the urethra among the most common. A good urethral speculum or a skeneoscope will aid materially in bringing them to light. Diathermy has been found, in our hands, superior to any other mode of destroying these excrescences promptly and permanently. Untoward results occurred in two instances as cited.

LESIONS OF EXTERNAL GENITALS

CASE 27.—A negress, aged 37, had a chancroid of the vulva of three months' duration, the lesions covering the entire vulva, which had been refractory to the usual treatment since its inception. The Wassermann reaction was negative. Three applications of surgical diathermy under ether, with an electrode 1 mm. in diameter, were given at ten day intervals. After the first application, the lesion was reduced one third. The patient was discharged, cured, at end of one month.

CASE 28.—A negress, aged 23, had a chancroid of the vulva of one years' duration. The Wassermann reaction, blood and spinal, was negative. The lesion which was the size of a silver dollar, was given one treatment with surgical diathermy, under ether anesthesia. The patient was discharged, cured, at the end of ten days.

CASE 29.—A negress, aged 19, had a chancroid of the vulva of eight months' duration, the lesion being the size of a half-

dollar. The Wassermann reaction was negative. One surgical diathermy application was given with a small button electrode, and the patient was discharged, cured, in sixteen days.

CASE 30.—A white man, aged 24, suffered from a chancroid of the penis of ten days' duration, the ulcer being the size of a quarter. Scraping was repeatedly negative for spirochetes. Two treatments with surgical diathermy were given at five day intervals, and the patient was discharged, cured, in two weeks.

CASE 31.—A white man, aged 19, had a chancroid of the penis of one week's duration, the size of a dime. Scraping for spirochetes was repeatedly negative. One surgical diathermy treatment was followed by complete healing in a week.

CASE 32.—A negro, aged 20, had a chancroid of the penis with suppurative bilateral inguinal adenitis, of three weeks' duration. Scraping of the lesion was negative for spirochetes. Under ether, surgical diathermy was given to the lesion. The glands were incised freely; pus and débris were swabbed out, and arsonvalization was done to the pockets, the entire inner surface of the walls being carefully gone over with a small bulb electrode. The penile lesion was destroyed at the one sitting, and the lesion healed in a week. Daily dressings completed the healing of the glands in nineteen days.

CASE 33.—A negress, aged 40, had a chancroid of the vulva and a granuloma inguinale of ten months' duration, the lesions being extensive. A course of antimony and potassium tartrate (tartar emetic) was given intravenously four months before she came to us, with some improvement, but the condition was now retrogressing. Under ether, surgical diathermy treatments were given to the entire surface of the granulations, 10 c.c. of 1 per cent. antimony and potassium tartrate was given intravenously every other day. The lesions, about 6 inches in diameter, which had occupied all of the right vulva and groin and half of the left, entirely healed in two weeks.

CASE 34.—A negress, aged 45, had a granuloma inguinale of four months' duration, the process extending over the entire vulvopubic and anal regions. The Wassermann reaction was negative. Under ether, she received surgical diathermy three times. Antimony and potassium tartrate was given every third day; and 1 per cent. antimony and potassium tartrate ointment was used locally. Within six weeks, the patient was discharged from the ward, cured, and truly grateful.

CASES 35 to 39.—These cases were all of granuloma inguinale in negro women. The lesions received from one to four applications of surgical diathermy. The average time of convalescence of the five patients was two weeks.

CASES 40 and 41.—These two patients had vulvar warts. One application of surgical diathermy, to the point of cooking the tumors, resulted in cure in both instances, in three days and one week, respectively.

In the fifteen lesions of the external genitals treated by diathermy (surgical), we feel convinced that the procedure materially shortened the time of convalescence, and, because of its cleanliness, the treatment recommends itself above all other methods of treating such lesions. It is specific for chancroid. In granuloma inguinale, it destroys the local process with more dispatch by far than when antimony and potassium tartrate alone is used. In suppurative inguinal adenitis complicating lesions of the external genitals, the employment of surgical diathermy to sterilize more efficiently the evacuated pocket has proved a decided advantage over the use of antiseptic solutions.

ENDOCERVICITIS

CASE 42.—A white woman, aged 22, had had a vaginal discharge for eighteen months. Cervical smears were positive for gonorrheal diplococci. Surgical diathermy treatments were given the cervix with a Corbus thermophore in two applications, each of forty minutes' duration, fourteen days apart. At the first application, the indifferent electrode was placed on the suprapubic region; at the second application, it was placed on the back. This was done so that the posterior lip would receive the same intensity of heat as the anterior lip. There was no pain experienced, even at 47 C. Smears remained negative following the second treatment.

CASE 43.—A white woman, aged 19, had a vaginal discharge for two months. Cervical smears were positive for gonococci. Three applications were made of surgical diathermy with a Corbus thermophore, the indifferent electrode being alternated front and back. No pain was experienced. Smears have remained negative.

CASE 44.—A white woman, aged 27, had a vaginal discharge for eight months. Smears were positive for gonorrheal diplococci. One application was made of surgical diathermy with a Corbus thermophore of forty minutes' duration, up to 47 C. There was no pain. A smear taken after one week had only a few organisms, while before treatment they were abundant. The patient is still under treatment.

While no definite conclusions should be drawn from observing three cases of gonococcal endocervicitis treated with diathermy, still the results have been so encouraging that it would seem to be a mode of treatment worthy of our careful consideration. We have varied from the technic of Corbus and O'Conor to the extent of alternating the indifferent electrode between the suprapubic region and the back, so as to treat effectually both anterior and posterior cervical lips. The treatment causes no pain whatever, and can easily be given in the office. We venture to predict that diathermy will soon occupy the position *par excellence* in the therapy of endocervicitis.

EPIDIDYMITIS

Of the many treatments that have been advanced for epididymitis, sedative diathermy has proved the most satisfactory. The instant relieving of pain; the more rapid subsidence of swelling, and the ability of the patient to return to his duties more promptly are among the advantages that can be credited to the procedure. For a patient who has presented himself suffering excruciating pain, to be placed on a table and given twenty minutes of sedative diathermy, and then walk off in comfort, is common experience. He is instructed to rest in bed for a day or so, and then return for observation. If relief has been constant, he may return to work, provided it is not too strenuous. One treatment suffices for the majority of cases. Two or three applications were found necessary in a few instances. Dispensary patients receive treatment with sedative diathermy in the morning, and frequently report for work at noon.

The treatemnt of epididymitis with sedative diathermy, while mentioned in the literature, has never been described in detail, so far as we have been able to determine. For this reason, we describe our technic in its entirety.

In this, as in all the applications of diathermy, it is absolutely essential to carry out technic to the letter. A good diathermy outfit, in good working condition, is obviously imperative. Any of the later models of high frequency units, with d'Arsonval current, high voltage, and having a meter reading to 3,000 milliamperes, will serve.

The table on which the patient is to lie must be insulated. A very satisfactory nonconductor is heavy rubber pads or glass disks. The patient is stripped from the waist to the knees; the parts to the treated are shaved. The indifferent electrode of block tin, 4 by 6 inches, is placed under the patient in the midline, the lower border of the block tin extending down as far

as the coccyx. The skin and electrode are well covered with a heavy lather or soap; the block tin is placed in perfect contact with the body. Air spaces between the skin and the electrode are apt to produce blistering. With the patient's thighs partly separated, the scrotal contents are brought well up and supported with cardboard or a wooden shelf. This support should be wide, and long enough to keep the parts in position. We have found it best to cover this support with a rubber dam, as sparking may occur at the edges of the electrode, especially if water accidently gets on the skin. The dam is fixed in place with adhesive plaster. A piece of mesh material is used for the active electrode, and should be large enough to cover the swollen organ. One should have two sizes, one piece 4 by 4 inches, and another 6 by 8 inches. This electrode, as well as the scrotum, is well soaped with lather, the operator making sure to obtain perfect contact. To keep the mesh from slipping, we attach to the upper margins of the electrode two rubber bands, letting them extend well up on the abdomen, where they are fixed with adhesive plaster. Reflex movements of the skin of the scrotum may cause the mesh to slip if some fixation is not resorted to. After the application of the mesh, it is covered by a piece of rubber dam to prevent the evaporation of the water in the lather. The terminal connections should be of heavy insulated wire, and should be attached to the mesh by means of metal clips, such as are used to hold dental films. The wire is strapped to the thigh, and the patient is instructed to remain perfectly still. Coughing, sneezing or laughing can, in a moment, undo twenty minutes' work. With everything set, the current is started at 50 milliamperes, and gradually increased up to 1,500 milliamperes. This is as high as we have gone. Different makes of instruments accomplish this in different ways. There must be no stoppage of the current flow during the treatment, as this produces shock with increase of pain instead of relief. Fifty milliamperes is given for the first minute; then we increase by about 50 every thirty seconds, to the point of tolerance, which, in most cases, using electrodes 4 inches square or 4 by 6 inches, has been around 750 milliamperes. A few patients will take up to 1,200 or 1,500, but this is exceptional. There must be no interruption in the steady flow of current. When the heat toleration point is reached, the current should be kept steady for twenty minutes, then gradually decreased, allowing about two minutes to bring the reading to zero. The current is then turned off, and the electrodes are removed. With this technic, we have failed only when we attempted to work with machines that could not be regulated to give an uninterrupted current flow.

CASE 45.—A patient with acute gonococcal epididymitis of one day's duration, with marked swelling and intense pain was given sedative diathermy up to 750 milliamperes for thirty minutes; the treatment was repeated on the third and again on the fifth day, after which time the patient returned to work. The pain disappeared after the first diathermy treatment, and within ten days all swelling had subsided.

CASE 46.—The patient had acute gonococcal epididymitis of one day's duration, in which there was little swelling but intense pain. One sedative diathermy treatment was given for thirty minutes. The next day, the patient was at the office feeling fine, with no pain and only a little tenderness. On the fifth day the epididymis was normal again. This was the patient's second experience with epididymitis, the first having been two years before, at which time the patient was confined to bed for three weeks, and relief was obtained only by opiates. He was grateful for the application of sedative diathermy.

CASE 47.—The patient, who had acute gonococcal epididymitis of twelve hours' duration, severe pain and much swelling and tenderness, was given sedative diathermy for twenty minutes. The next day, when seen at his home, there was no pain or discomfort; the tenderness was less, and swelling had appreciably diminished. He went to work on the fourth day, and remained on his feet for twenty hours; he had a return of epididymitis. Sedative diathermy was given for twenty minutes. Recovery was uneventful.

CASES 48 to 53.—In these six cases of acute gonococcal epididymitis, the duration was from one to three days, and swelling and pain were marked. One application of sedative diathermy of twenty minutes' duration, up to about 700 milliamperes, was given to each patient. All responded promptly; pain was relieved almost immediately, and swelling was reduced to normal size in from five to eight days.

CASES 54 to 58.—In these five cases of acute gonococcal epididymitis, the duration was two days, and pain and swelling were marked. One application was made of sedative diathermy for thirty minutes. There were prompt results as regards relief of pain and swelling. The patients returned to work in from three to ten days.

CASES 59 and 60.—Both patients, with acute gonococcal epididymitis of one day's duration, received sedative diathermy in the clinic and returned to work within a few hours. Relief was prompt, and there was no return of symptoms.

CASE 61.—The patient, who had acute gonococcal epididymitis of two days' duration, was given sedative (?) diathermy for twenty minutes with no relief of pain. The apparatus used was an old model at the hospital, and failure was attributed to faulty technic in that the machine could not be regulated so as to give an even current flow.

CASES 62 to 69.—In these eight cases of acute gonococcal epididymitis, each patient received one treatment with sedative diathermy of twenty minutes' duration, up to 650 milliamperes. Results were prompt and permanent.

CASE 70.—The patient, who had acute orchitis complicating mumps, had suffered for four days without sleep or relief. Morphin failed to relieve pain appreciably. Thirty minutes of sedative diathermy was given, up to 1,200 milliamperes. There was immediate relief of the pain and a gradual decrease in the tenderness and swelling. At the end of ten days the testis was normal in size, and the patient resumed work.

Twenty-five patients with acute gonococcal epididymitis were treated with sedative diathermy with prompt improvement in all but one, this case being one in which failure was due to faulty technic, in that the apparatus could not be regulated so as to give an even current flow. One patient with acute orchitis complicating mumps was instantly relieved of intense pain by a single application of sedative diathermy.

ARTHRITIS

CASE 71.—The patient had acute gonococcal arthritis of the right knee and the right shoulder of one weeks' duration. Both joints received two treatments with sedative diathermy, each of twenty minutes, the cuff method being used. The pain was lessened promptly, and movement of the joints became more free within three days.

CASE 72.—The patient had acute gonococcal arthritis of the left knee of two days' duration; there was much swelling and excruciating pain. Sedative diathermy by the plate method was given for thirty minutes, with immediate relief of pain and gradual decline in the size of the joint. This patient was able to walk within three days, and left the hospital at the end of a week.

CASE 73.—The patient had acute gonococcal arthritis of the left elbow joint of six months' duration; there was almost complete ankylosis, with much pain. Sedative diathermy was given for twenty minutes, two applications a week apart, by the plate method. Decided relief of pain and gradual improvement in motion of the joint resulted. The patient deserted the hospital before treatment could be carried further.

Whereas, a study of but three cases of gonococcal arthritis, in which we have had opportunity of employing sedative diathermy, cannot furnish definite conclusions relative to this method of treatment, still our results have been so striking in their promptness as to warrant their being included in this report, so as to stimuate other workers to investigate the merits of the procedure.

CONCLUSIONS

1. Diathermy, that modality of high frequency employing the bipolar (d'Arsonval) current, has a definite field of usefulness in urology.

2. Medical diathermy, or thermopenetration (sedative technic), by means of which we appreciably raise temperature within the tissues, has been demonstrated to be of decided value in treating epididymitis, endocervicitis and arthritis.

3. Surgical diathermy, or electrocoagulation, in which tumor cells are destroyed by intense heat to any desired depth (without carbonization), has proved itself superior to other methods in dealing with vesical neoplasms, tumors of the urethra and lesions on the external genitals.

4. The seventy-three cases of urologic conditions treated with diathermy, either medical or surgical, reported here in abstract, demonstrate conclusively the value of the procedure.

1326 Whitney-Central Building.

TUMORS INVOLVING THE DOME OF THE BLADDER *

ALBERT J. SCHOLL, M.D.
LOS ANGELES

Sonnenburg,[1] in 1881, resected a large portion of a bladder in the course of an abdominal operation. In 1885, encouraged by the outcome of his earlier operation, he carried out the first deliberate resection of the bladder for carcinoma in man. Curiously enough, this was for a tumor in the dome and posterior wall, the most accessible part of the bladder, and apparently the simplest point of attack in this unknown field. The resection involved the peritoneal cavity, which was later drained. The bladder was not closed, and the patient died four weeks afterward from peritonitis. Several years later, Rydygier,[2] in a case of carcinoma of the bladder, deliberately opened the peritoneum and performed a combined intravesical and intra-abdominal operation. Von Antal,[3] in the early period of frequent infections and high operative mortality, recognizing the danger of opening the bladder transperitoneally, advocated separation of the peritoneum from the bladder, and then opening of the viscus extraperitoneally. This procedure was later developed by Guyon [4] and Czerny,[5] and has recently been described by McCarthy.[6] In 1907, C. H. Mayo [7] summed up the status of the transperitoneal approach to the bladder. He said, "As a rule, when used at all, the method is employed without previous plan, owing to necessity or accident at the time of operation." With the development of surgical technic, improved asepsis, and methods of isolating the general peritoneal cavity, a transperitoneal exposure of the bladder has become comparatively harmless. In 1912, Judd [8] advocated that the peritoneum be opened in all cases in which the lesion was high on either side, or at the dome. In 1914, Thomson-Walker [9] asserted that in all cases of tumor of the posterior wall, the peritoneum should be opened and the peritoneal surface of the bladder examined.

The dome of the bladder resembles the silent area of the stomach, the greater curvature, where tumors occasionally become large before localizing symptoms appear. In some cases, the bulk of the tumor, an occasional area of fibrosis, and calcareous degeneration, suggest a long-standing condition. Attention may first be directed to the bladder by the finding of a large, fixed, suprapubic mass which is quite symptomless. Pain is uncommon. Frequency and hematuria, when they occur, are rarely as severe as when tumors affect the more active segments of the bladder, the base and the trigon.

Tumors of the dome and posterior wall of the bladder are not common. Albarran [10] found only one in a series of sixty-seven cases; Féré,[11] two in 107 cases, and Delbru,[12] twelve in a review of 1,000 cases.

Thirty-one patients with tumor of the dome of the bladder were treated surgically at the Mayo Clinic between Jan. 1, 1910, and Jan. 1, 1924. Nine (29 per cent.) of these were women; this sex ratio is higher than usual in cases of this type. Seven of the nine female patients in the series are alive, from one to six years having intervened since operation; two are dead; one, one year, and one, seven years after operation.

SURGICAL TREATMENT

If the tumor does not include the peritoneal surface of the bladder, the bladder may be separated from it, which usually indicates that the growth has not extended through the wall of the bladder. This obviates the necessity of opening the peritoneal cavity, or of resecting the serous coat. In an occasional case, puckering and dimpling of the peritoneum over the tumor suggest involvement of the peritoneum; yet it may be readily stripped from the bladder and no actual malignancy revealed.

In order to relieve pathologic conditions in the lower abdomen, the bladder and peritoneal cavity are occasionally opened simultaneously; if there is little or no infection of the bladder, and if the patient's resistance is good, this procedure carries only a small risk. On the other hand, if patients have extensive malignant disease of the bladder, accompanied by the usual cystitis, infected urine, and poor general physical condition, the simultaneous exposure of the peritoneal cavity and bladder entails considerable risk. When the growth includes the peritoneum, it is usually necessary to risk the possibility of infection and open the abdominal cavity, in order to provide sufficient exposure of the diseased portion of the bladder, and also to permit the resection of the malignant area on the peritoneum.

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* From the Section on Urology, Mayo Clinic.

* Read before the Section on Urology at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June, 1924.

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2. Rydygier, L.: Eine neue Methode der Sectio alta, Wien. med. Wchnschr. **38**: 489, 533, 561, 1888.
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9. Thomson-Walker, J. W.: Surgical Disease and Injuries of the Genito-Urinary Organs, New York, Funk and Wagnalls, 1914.
10. Albarran, J.: Les tumeurs de la vessie, Paris, G. Steinheil, 1892.
11. Féré, C.: Du cancer de la vessie, Paris thesis, 1881.
12. Delbru, M.: The Results of Palliative and Radical Treatment of Tumors of the Apex of the Bladder, Internat. Clin., Series 26, **4**: 286-291, 1916.

Transperitoneal Resection.—Infection of the peritoneum was a common cause of death in earlier operations following transperitoneal resection of the bladder. Our present methods of walling off and protecting the general peritoneal cavity have greatly reduced the resulting infection following peritoneal exposure. Delbru collected reports of six cases of transperitoneal resection

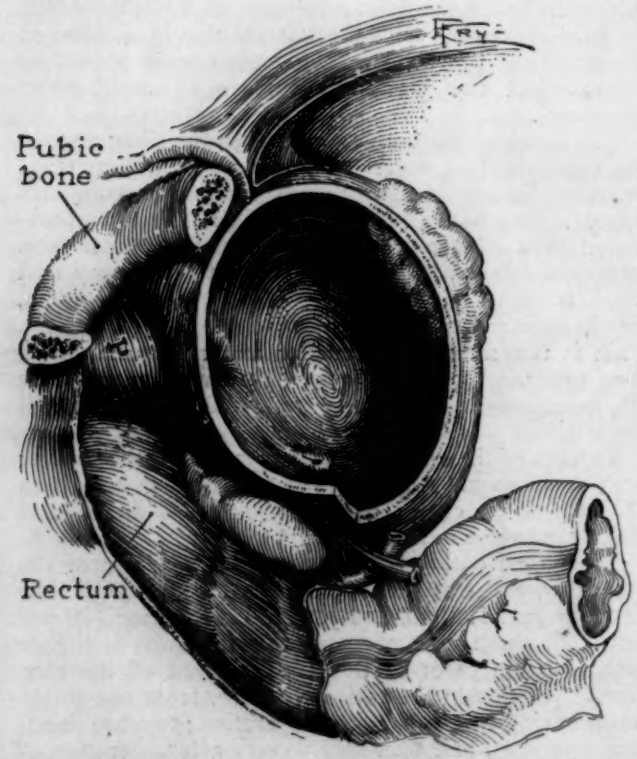


Fig. 1.—Tumor of the dome of the bladder with extension to the peritoneal surface.

of the dome of the bladder, in which four patients died following operation. In contrast to this, he reported five cases of extraperitoneal excision of tumors of the dome, in which all the patients recovered. Even with our improved methods of peritoneal protection and asepsis, peritonitis occasionally occurs following resection for tumors of the bladder, which is not entirely dependent on exposure of the peritoneal cavity. It may occur following complete extraperitoneal resection, and usually results from extension of a severe infection of the bladder and pericystic tissues.

There were fourteen cases of tumors of the dome of the bladder in which a transperitoneal resection was performed. In most cases, the bladder was opened first, and then the peritoneal cavity. The general abdominal cavity was well isolated and walled off with gauze packs, and, unless there was marked contamination, the peritoneal cavity was closed without drainage. None of the patients had peritonitis following operation. One patient died of myocarditis seven days after operation; at necropsy, the region of the bladder and peritoneum were free from infection. One patient died three months after operation, and four, from three to seven years after. Eight are still living; six are well from one to three years, and two have had recurrences, three years after operation.

Deperitonealization.—This procedure, first described by Voelcker,[13] isolates the bladder and its area of peritoneal involvement from the abdominal cavity before the bladder is opened. It is a suitable operation for cases in which a portion of the peritoneal covered surface of the bladder is affected and must be resected (Fig. 1). The peritoneum is opened before the bladder is opened, which gives an excellent opportunity for determining the extent of the growth, and also permits exploration of the abdomen for evidence of metastasis (Figs. 2 and 3). The bladder is then raised out of the peritoneal cavity, and the affected portions of its wall and covering appear as an extraperitoneal surface. The peritoneal cavity is then closed by suturing the anterior layer of peritoneum to the base of the bladder (Figs. 4 and 5). In cases in which the growth is so extensive as to require the excision of a large portion of the peritoneum, suturing may cause marked tension of the abdominal layer of peritoneum, but usually the peritoneal suture can be readily made to a level on the surface of the bladder below the point of involvement. Tension is most marked in cases of recurrence, in which a second extensive resection is necessary.

If the extent and exact location of the tumor cannot be determined without opening the bladder, it should be opened. If the peritoneum is affected, the open bladder should be walled off with gauze packs from the peritoneal surface, and the peritoneal cavity opened. The anterior wall of the peritoneum is then accurately sutured to a level below the involved area on the wall of the bladder before resection is attempted. This method of resection was carried out in twelve cases. One patient died nine days after operation; at necropsy the peritoneum was not infected. Two patients died from recurrence; one, two years, and one, four years after operation. Nine are still alive: seven are well from six months to seven years after operation, and two have had recurrences, one, six months, and one, one year after operation.

Extraperitoneal Resection.—In five cases, the tumor was in the dome of the bladder, and the peritoneum was

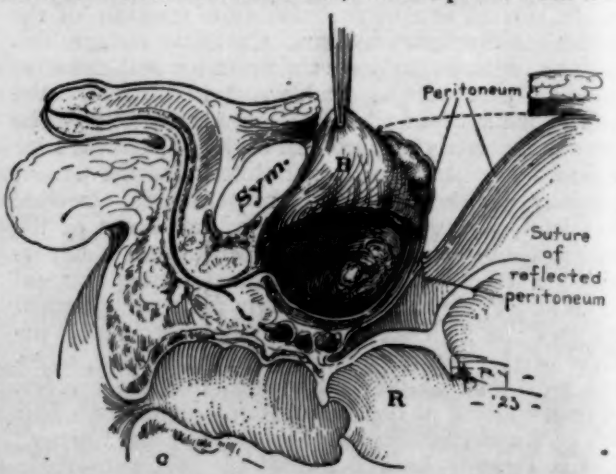


Fig. 2.—Peritoneal cavity opened, and anterior layer of peritoneum sutured to the base of the bladder below the tumor. Peritoneal covering over tumor left intact.

not affected. The peritoneum was stripped from the surface of the bladder and an extraperitoneal resection performed. One patient was not heard from, and two have since died, one from extensive recurrence in the prevesical space a year after operation, and the second, from other causes. Two patients are alive. One had had an extensive recurrent growth, which was resected two years after the first operation; two years later he

13. Voelcker and Wossidlo: Urologische Operationslehre, Leipzig, G. Thieme, 1921.

was well. The second patient was also in good health two years after operation.

PATHOLOGY

Tumors of the dome and posterior wall of the bladder are often single and very large; they sometimes affect the whole upper third of the bladder, and occasionally the perivesical tissue.

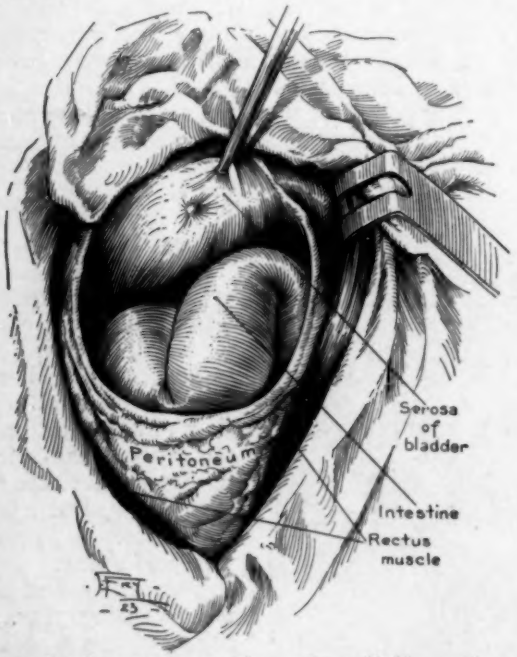


Fig. 3.—Involvement of posterior wall of bladder, and overlying peritoneum.

Delbru, in a review of nineteen cases, found five benign tumors, and thirteen definitely malignant. Two of the benign tumors were myomas, two papillomas, and one was a fibroma. All the tumors observed in the Mayo Clinic series were malignant. The majority were of the flat, epitheliomatous type that penetrates into the deeper tissues and extensively involves the wall of the bladder. Two were malignant papillomas; one of these was multiple, and multiple growths recurred in the dome, requiring operation one year later. This patient died seven years after the first operation, but from other causes. The second patient is well and living, three years having passed since operation.

Flat Epitheliomas.—Flat epitheliomas are all of the same degree of malignancy and do not differ from similar tumors occurring in other portions of the bladder. They extend rapidly and early, and should be watched constantly for local recurrence.

Squamous Cell Tumors.—Squamous cell tumors are only rarely found in the bladder. They probably develop from metaplastic mucosa which has undergone epidermization as a result of irritation from infection or from stone. There is often a history of long-standing cystitis. The wall of the bladder is extensively affected by these growths, which are generally flat and ulcerated, and occur in the region of the trigon; they may also involve the internal sphincter of the urethra. There was one case of squamous cell tumor situated in the dome, and extending back on the intraperitoneal portion of the bladder. At operation the peritoneum was opened, the abdomen explored, and the upper layer of peritoneum sutured to the posterior wall of the bladder below the tumor, thus permitting an extraperitoneal resection of the involved area of bladder. Six months after operation, the patient was perfectly well and recurrence was not found on cystoscopic examination. The tumor was firm and compact, 3 cm. in diameter, flat, and with a smooth upper surface. Histologically, it was of a high degree of malignancy. The cells were large, irregular in size and shape, and many contained prominent nucleoli. There were many small areas of hyaline degeneration, the cells having a tendency to form epithelial whorls. The extensive cornification and lamellation of structure occasionally seen in squamous cell tumors of the bladder did not occur.

Adenocarcinoma.—Glandular types of malignancy differing from other vesical growths have a predilection for the upper areas of the bladder, particularly the dome, which suggests an origin from remnants of embryonal inclusions. Certain tumors probably arise from the glands of von Limbeck[14] and von Brunn,[15] or from the degeneration of small, pinched-off epithelial buds. Adenocarcinomas are the most distinctive of all tumors occurring in the dome of the bladder; they are usually only moderately malignant, and grow slowly. In some instances the preoperative symptoms cover a period of many years. If the growths are removed before the surrounding tissues become involved extensively, good results are obtained. They are usually flat and extensive, forming a large mass which may project deeply into the bladder or extend freely into the perivesical tissues; occasionally there is only slight intervesical involvement. In one case, a hard mass 5 cm. in

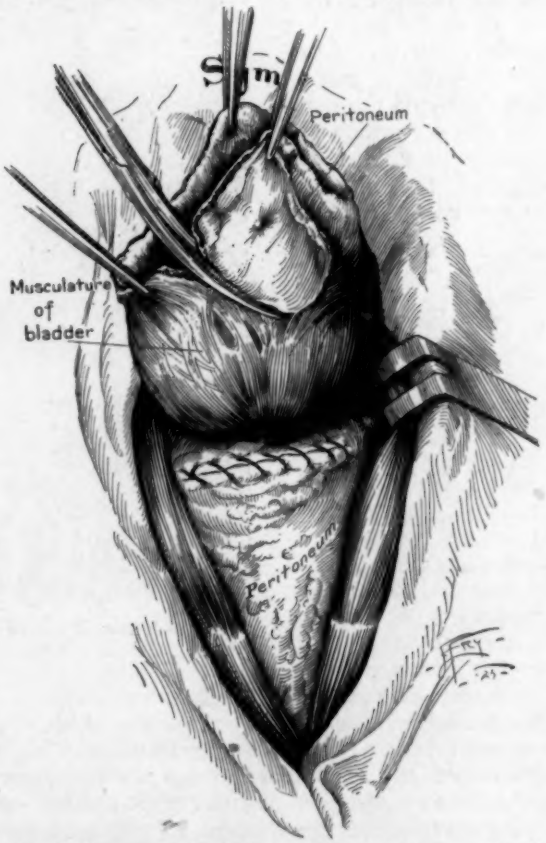


Fig. 4.—Peritoneum stripped from bladder below area of malignant involvement. Anterior layer of peritoneum was sutured to the bladder peritoneum, closing the peritoneal cavity before the bladder was opened.

14. Von Limbeck, R.: Zur Kenntniss des Epithelcysten der Harnblase und der Uretern, Ztschr. f. Heilk. **8**: 55-66, 1887.
15. Von Brunn, A.: Ueber drüsenähnliche Bildungen in der Schleimhaut des Nierenbeckens des Ureters und der Harnblase beim Menschen, Arch. f. mikr. Anat. **41**: 294-302, 1893.

diameter was found in the suprapubic region. The patient was a woman, aged 50. Cystoscopically, only a small area 2 cm. in diameter was found in the roof of the bladder; the surrounding mucosa was edematous, suggesting extravesical involvement. A roentgenogram revealed an extensive calcareous deposit in the tumor, suggesting a long-standing condition.

De Korté[16] has described a glandular carcinoma removed from the dome of the bladder of a woman, aged 50. The growth did not return, but the patient died shortly after operation. Adami, who examined the tumor, concluded that it originated from urachal remains. Barringer[17] reported a case of adenocarcinoma involving only the dome of the bladder; the greater part of the tumor was above the bladder. Ewing,[18] who examined the tumor, said that the growth was unique, and quite possibly came from a remnant of the allantoic end of the bladder, or possibly developed from a cloacal inclusion. Hartmann[19] also removed a glandular carcinoma from the dome of the bladder, which was thought to have been derived from an allantoic remnant. Lavenant[20] reported a case of colloid tumor of the dome of the bladder which histologically resembled carcinoma of the intestine. The upper half of the bladder was removed after exploration of the peritoneum; the abdominal cavity was closed by suturing the peritoneum to the bladder below the growth. The patient was living two years later. Hagner[21] reported a case of fibroadenoma of the superior portion of the bladder. This tumor was pedunculated and was covered with mucous membrane; it resembled a fibroma more than it did a glandular malignant tumor.

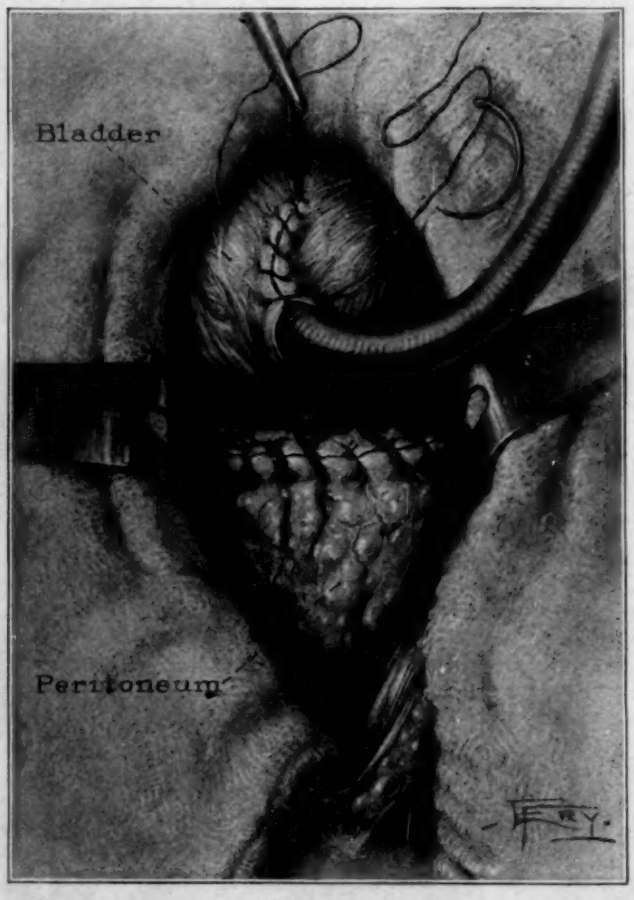


Fig. 5.—Method of closure of the bladder in relation to the peritoneal cavity.

There were five cases of glandular carcinoma. Two of the patients are dead, and three are living. One patient died four years after operation, and his case illustrates not only the extent and rapidity of recurrence of these tumors, but also the tendency toward extravesical growth with involvement of the neighboring structures. The patient, a man, aged 29, had a widespread tumor involving the dome of the bladder, and also the peritoneal covering of the posterior wall. The peritoneal cavity was opened and the peritoneum sutured to the base of the bladder. Two years later, an extensive recurrent tumor in the dome and anterior wall was resected. The patient died one year later. At necropsy, the growth was found to have constricted both ureters; there was complete obstruction on the right, and partial obstruction on the left, with corresponding distention and destruction of the kidney. The original tumor, as well as the recurrent growth, revealed extensive colloid degeneration. Only a few cells remained; these had deeply staining nuclei and were embedded in masses of collagenous material. The cells, for the most part arranged in irregular masses, were rounded, and mucoid degeneration was marked. In an occasional area, they were grouped in an etched outline, possibly a partially destroyed glandular remnant. True glands were not seen.

In one case of extensive peritoneal involvement, a transperitoneal resection of the upper third of the bladder was performed. Two years later, the patient returned with a large recurrent growth, also extensive involvement of the peritoneum, and a second transperitoneal operation was performed.

The patient died during the following year. The primary growth was 7 by 10 cm., and the recurrent growth was 6 cm. in diameter. The tumors were composed of glands similar to those found in carcinoma of the sigmoid and rectum, and described by Ewing as "adenoma destruens." The glands were large and ramifying, extending into the wall of the bladder and perivesical tissues. Glands of this type are usually found in the mucous covering of exstrophied bladders, where they occasionally undergo malignant degeneration.

One of the three living patients had had a tumor which penetrated the wall of the bladder and affected the small intestine. A transperitoneal operation was performed. It was necessary to resect 25 cm. of the small intestine in order to remove all of the growth. An end-to-end anastomosis of the intestine was performed. One year later, the patient was well. The tumor was composed of extensive masses of colloid material supported by a framework of fibrous tissue. A few well formed glands were found, similar in appearance to the large intestinal glands seen in malignant conditions. In other areas, only small linear remnants of cells were present. This tumor was apparently in an early stage of transition from the intestinal type of adenocarcinoma to that of an extensive colloid degeneration. The second patient had a recurrence in the

16. De Korté, W. E.: An Adenoma of the Bladder, J. Path. & Bacteriol. **22**: 319-322, 1918, 1919.
17. Barringer, B. S.: Colloid Adenocarcinoma of the Bladder, Surg., Gynec. & Obst. **30**: 86-87 (Jan.) 1920.
18. Ewing, J.: Neoplastic Diseases: A Textbook on Tumors, Philadelphia, W. B. Saunders Company, 1919.
19. Hartmann, quoted by Lavenant (Footnote 20), p. 45.
20. Lavenant, A.: Épithélioma colloïde d'origine allantoïdienne du sommet de la vessie, J. d'urol. méd. et chir. **17**: 43-46 (Jan.) 1924.
21. Hagner, F. R.: Report of a Case of Fibro-Adenoma in the Bladder Wall, Occurring in Fundus of Bladder, Am. J. Urol. **3**: 414, 1907.

suprapubic tissue three years after resection of a tumor in the dome and posterior wall; the bladder itself was not affected at this time. The second growth was excised, but two years later there was further recurrence in the same area. The tumor was markedly colloid in character, being composed of soft, translucent masses and containing only a few cellular elements; these were grouped either in an irregular glandular formation or in a single layer along the border of an extensive colloid mass. There were many areas of interlacing bands of fibrous tissues, and also of calcareous degeneration. The third patient was alive and well six months after the resection of the upper half of the bladder. The tumor removed was firm, contained very little colloid material, and was composed of glands of the intestinal type, formed from several layers of cells, which in some areas were quite irregularly disposed and contained deeply staining nuclei. In several areas, a gradual change could be made out from the transitional cells of the bladder of the mucosa to that of the intestinal type of glands.

Sarcoma.—Sarcomas are only rarely found in the bladder. Four of 107 cases of sarcoma of the bladder collected by Munwes [22] occurred in the dome and posterior wall. Metastasis is common, and the condition rapidly fatal. The majority of patients in the series compiled by Munwes died shortly after operation.

Myomas.—Myomas of the dome of the bladder, like connective tissue tumors of the bladder in general, may grow very large. They are usually located on the trigon or posterior wall, often pedunculated, and generally covered with thinned-out mucosa, which often presents an ulcerated, easily bleeding surface. Because of their covering, and especially when the tumor is located in the dome, the tumors may appear extravesical, cystoscopically. Heitz-Boyer and Doré [23] found one case of fibromyoma of the dome in thirty-two collected cases of fibromyoma of the bladder. Kouznetzki [24] described an enormous fibroma, weighing more than 9 kg. and with a circumference of 68 cm. This tumor, which was pedunculated, grew from the posterior and superior walls of the bladder, extended to the umbilicus, and markedly compressed the uterus and rectum. The growth was resected through a median line, abdominal incision.

POSTOPERATIVE RESULTS

Tumors of the dome of the bladder are usually highly malignant and extensive. On the other hand, they are readily resected, occur earlier in life than tumors of the base, and obstruction to the ureteral or bladder outlets is rare. Consequently, infection and destruction of renal function, which is so commonly the cause of death following resection of tumors of the base, is rare. Since the tumors occur in a comparatively symptomless area of the bladder, they grow large before operation is attempted. The resection of tumors of similar size and degree of perivesical extension located in the base of the bladder, with involvement of the trigon and adjacent structures, would be attended by a much higher immediate mortality.

There were two deaths following operation. One patient was a man, aged 61, who came to the clinic on account of frequency and dysuria of one year's duration. At operation, an extensive epithelioma of the dome was found; the upper third of the bladder was removed. The growth had extended through the peritoneal wall, and a transperitoneal resection was performed. The peritoneal cavity was drained. The patient died on the seventh day, of myocarditis and cardiac dilatation. At necropsy, the operative field was clean. No metastasis was found. The second patient was a man, aged 54, who had had a vesical calculus removed thirty-seven years before. Since then he had had frequency and dysuria at intervals. On cystoscopic examination, a tumor of the bladder was found, and at operation, a tumor, which involved the dome and posterior wall, was resected. The peritoneum was opened, the bladder lifted out of the abdominal cavity and the peritoneum sutured to the base of the bladder. The growth extended extravesically and involved the left ureter. The ureter was transplanted to an uninvolved portion of the bladder. The patient passed only a small amount of urine following operation, and died on the ninth day. Necropsy revealed a congenitally atrophic right kidney and an hypertophied left kidney. There was an ascending infection with multiple abscesses of the left kidney. Death was due to obstruction and infection of the single functioning kidney.

Complete postoperative data were obtainable concerning twenty-eight of the remaining twenty-nine patients. Nineteen were alive; seven, one year; eight, two years, and four, from three to six years after operation. Four had had recurrences, all from one to two years after operation. In one case, a small recurrent growth was treated successfully by fulguration one year after operation. One year later, a second growth developed in the suprapubic tissues; this was removed by wide excision. In a second case, the growth was removed surgically one year after operation. One patient did not return for treatment of the recurrent growth and the fourth was considered in unsuitable condition for further surgical procedures, and was treated with radium.

Nine of the twenty-eight patients for whom complete operative data were obtainable died. One died two months after operation from septic nephritis and femoral phlebitis. Three died one year after operation, one from recurrence, one from bronchopneumonia, and one from a cerebral lesion. The last two patients apparently had no recurrence or metastasis at the time of death. Three died from recurrences from two to four years after operation. One had metastasis to the right humerus two years after operation; the growth had broken through the periosteum, and death occurred following its removal. The last patient died seven years after operation, from other conditions.

COMMENTS

Local recurrences and metastasis were common. When the recurrent growths are treated in the early stages, even though originally resistant, they usually respond readily to intravesical fulguration and radium, as noted by Braasch. According to a system adopted several years ago in the Mayo Clinic, all patients who have been operated on for vesical neoplasm are written to regularly, and urged to have cystoscopic examinations every three months following operation during the first year; after that, observation depends on the local condition. Such observation and treatment applies to glandular types of malignancy, as well as to the usual recurrent epitheliomas. In general, the recurrent growth is single, and occurs in the same location as the original tumor, or in the scar of the former operation. Recurring in an area that is comparatively silent, these

22.—Munwes, C.: Zur Statistik und Kasuistik der Blasen-sarkome, Ztschr. f. Urol. **4**: 837-859, 1910.
23. Heitz-Boyer and Doré: Tumeurs musculaires lisses de la vessie, Ann. d. mal. d. org. génito-urin. **28**: 2019-2062, 1910.
24. Kouznetzki: Enorme tumeur bénigne de la vessie, J. russe d. mal. vén. et cut.; abstr. Ann. d. mal. d. org. Génito-urin. **27**: 122, 1909.

second tumors, like the original growth, may attain a large size before causing symptoms. They not infrequently spread rapidly, extensively involving the perivesical tissues.

The high degree of malignancy and the extensive involvement usually found at the primary operation make it difficult to remove the growths completely. In spite of a satisfactory operative recovery, in most cases the late results approximate those following the removal of tumors from the lower segment of the bladder.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. BUMPUS, WALTHER AND PEACOCK, AND SCHOLL

DR. B. C. CORBUS, Chicago: I am absolutely opposed to the excision of any tumor, whether potentially benign or malignant, for diagnosis or for treatment. Diathermy is the greatest force that has been added to medicine and surgery in recent years. Two disease conditions are amenable to heat treatment: infections of gonorrheal origin and cancer. I agree with Dr. Bumpus in his classification of these tumors. Papillary carcinoma represents the end-results of papilloma. A simple papilloma can become a very malignant carcinoma. We should at all times minimize the chance of metastases. Tissue for microscopic study should be removed with the cautery. Our plan is to follow this immediately by total destruction of the tumor with thermo-electric coagulation, either transurethral or by a suprapubic cystotomy. There is no question that diathermy is far superior to radium. I do not agree with the statement that highly malignant tumors should be treated surgically. The more malignant a growth is, the less should we attempt to remove it by excision. If we apply heat first, last and all the time, treating that part of the bladder in which the tumor lies as well as the surrounding parts, our results will be a great deal better. Since May 1, 1919, my associate, Dr. V. J. O'Conor, and I have treated twenty-six cases of carcinoma of the bladder by diathermy. Of the first ten cases, five were given topical radium applications as a supplement. The remaining patients have received no treatment other than diathermy, except for one very advanced, hopeless case in which deep roentgen-ray radiation was used as an adjunct, but without success. There was one hospital death. This occurred forty-eight hours after operation from acute gastric dilatation and cardiac failure in a man in whom the prognosis as to tumor destruction seemed most favorable. In the remaining twenty-five cases there have been three deaths, one in an advanced carcinomatosis of the bladder treated by diathermy and radium. The patient died two years after operation with a recurrence in the bladder. The second death occurred in a man who showed a very extensive multiple carcinomatous involvement of the bladder. The third death occurred from generalized carcinoma metastasis four months after the suprapubic destruction of a small, infiltrating carcinoma of the bladder. There was no vesical recurrence present one month prior to death. Of the remaining twenty-two cases, twenty are free of recurrence after from six months to four years. Of the twenty-two patients who are symptomatically and objectively well, four had been operated on elsewhere from one to three years prior to consulting us. All of them showed recurrence of carcinoma after excision; two were very extensive and two appeared favorable. One other patient had been subjected to three suprapubic operations in which excision, the actual cautery and radium had been of no avail. It is now three years and three months since her last operation; she is free of recurrence and has a bladder capacity of eight ounces. Of the twenty cases in which no recurrence has taken place, all were clinically and objectively malignant. Fourteen were verified by microscopic examination. Sixteen of the twenty patients had trigonal and ureteral orifice involvement. In addition to apparent cure, the very satisfactory ureteral and bladder function is notable. The smallest bladder capacity in any of these patients is 6 ounces (178 c.c.), and practically all have regained normal capacity and are free from all distressing urinary symptoms. In no single instance have we burned through to the rectum or to the vagina.

DR. GUSTAV KOLISCHER, Chicago: The majority of pathologists agree that it is impossible to determine the degree of malignancy by the morphologic details. In reviewing the world's literature, one finds that surgery of malignant tumors of the bladder furnishes very poor results. The primary mortality is high even in the best hands; recurrences at an early date are the rule. Even temporary results are impaired because resections considerably reduce the capacity of the bladder. The same may be said about radium and roentgenotherapy, if used alone. The persistent application of radium has another disadvantage. If, after the radium therapy has failed, operative relief by cystostomy has to be resorted to, its chances are reduced because by this time the bladder is reduced to a leathery cup and all the adjacent tissues are devitalized. Inserting capsules or needles carrying radium into malignant tumors is not compatible with our knowledge of the physiotherapeutic qualities of radium, does not furnish any appreciable results, and quite often leads to the formation of suppurating fistulas and subsequent sepsis. To claim special merits for capsules carrying radium emanation is not warranted by the facts—it means simply sewing new buttons on an old coat. The modern high voltage roentgenotherapy is still questionable as to whether its dangers are not outweighing the possible therapeutic results. While it is true that we are in a position to protect the skin, the production of the so-called fatty callus in the subcutaneous tissues and the deleterious influence on the large glands is entirely beyond our control. It seems, though, that the combination of electrocoagulation and radium furnishes in malignant tumors of the bladder results superior to that accomplished by the older methods. Surgical diathermy is not a cure-all for cancers of the bladder, but at the present time it is the best method. Surgical diathermy shows a very low primary mortality; the whole procedure is simple and practically bloodless, the employment of sacral anesthesia furnishing another advantage. If definite results are obtained, the capacity of the bladder is not reduced. Even if definite cure cannot be accomplished, the electrocoagulation relieves the suffering and stops the hemorrhage. For myself, I cannot see why any surgeon, unless extremely prejudiced, could employ another method in dealing with malignant vesical tumors, after he once has witnessed electrocoagulation.

DR. GEORGE G. SMITH, Boston: I feel that it is unjust to speak disparagingly of certain therapeutic methods because they are unable to produce complete cure in these cases. If radium, for example, or any other therapeutic measure, will give relief to a patient with severe carcinoma of the bladder and cystitis, it is a measure that is extremely well worth employing. I cannot agree with Dr. Bumpus that cases which are unsuitable for surgical removal are also unsuitable for treatment with radium. I have in mind a man with a large sessile tumor on the left lateral wall of the bladder. This wall of the bladder was adherent to the pelvic wall; the tumor could not have been removed except by extensive operation, and even then it is doubtful whether one could have removed it entirely. The introduction of twelve seeds of radium into the periphery and center of this growth produced complete disappearance, with normal mucosa over the area. This man was well for two years and then had a slight recurrence well up in the bladder wall. I advised repeating the treatment, but the patient did not wish to have it done, he was feeling so well. I had a similar case, and after two years the patient showed no recurrence so far as cystoscopic, rectal and general examination could determine. I do not see how Dr. Kolischer can make such a sweeping accusation against radium. Every one knows that if it is put into tissue it will cause complete necrosis of the tissues surrounding the seed or needle. If by implanting radium seeds throughout the tumor 1 cm. from each other one can bring about, with absolute certainty, a complete destruction of the tumor, why should this not be done? Of course, if the area that is implanted is larger than 4 cm. in diameter, there will be such an extensive sloughing that there will be danger of killing the patient with toxemia, and so there is a limit to the size of the growth that can be treated in this way.

DR. B. A. THOMAS, Philadelphia: Malignant disease of the bladder is the least satisfactory phase of urologic surgery, and therefore is the one to which we should direct our greatest attention. I deplore the term "malignant papilloma," for histopathologically there is no such condition. As soon as a papilloma becomes malignant, it is no longer a papilloma; it is a papillary carcinoma. Therefore I feel that the term malignant papilloma should be stricken from our nomenclature, and then in our scientific discussions each will be able to understand what the other is talking about. The suggestion by Dr. Bumpus to reclassify the tumors of the bladder with respect to their malignancy is excellent. Such a classification is certainly worthy of our serious consideration, in order to get away from the erroneous and confusing statements regarding malignant tumors of the bladder. Relative to the treatment of bladder carcinomas, I feel, as Dr. Smith stated, that we must be very broad minded at present about this subject, and should regard each case on its own merits after a careful cystoscopic and roentgenographic examination in the particular individual concerned. I believe today no one will dispute the fact that the vast majority of papillomas, single or multiple, can be successfully treated by electrocoagulation, desiccation, diathermy, fulguration or whatever modality of the d'Arsonval current one may choose to designate it. I think we are also agreed that any cancer of the bladder favorably situated, whether or not it is necessary to resect one or both ureters, should be removed surgically by resection or subtotal cystectomy. Between these types and the final advanced, hopeless stage of the disease we have two groups of bladder carcinomas, one in which we may relieve symptoms and prolong life even though we have no hope of curing the patient and, finally, the hopeless, advanced type of the disease in which it is obvious that any form of treatment, so far as cure is concerned, is out of the question. We have learned in the last two years, by placing more reliance on the aerocystogram, that we can eliminate and save a large number of patients with advanced infiltrating carcinoma of the bladder from any form of meddlesome surgery, and let them pass their dying days in peace and not discredit surgery. On the other hand, there is a fair sized group in which symptoms can be relieved and life prolonged by cystotomy, fulguration, radium and the roentgen ray.

DR. VINCENT J. O'CONOR, Chicago: I believe that urologists, especially those dealing with gonorrheal infections, appreciate the value of diathermy in these cases. Diathermy is a most valuable agent. I wish to stimulate the interest of the men doing this work in this particular type of therapy, not on the views of those commercial houses which are trying to sell machines, but on accurate, scientific knowledge of this method. Dr. Corbus and I have been employing diathermy in genito-urinary cases for four years, and our work and our ideas have changed as we have advanced or tried to advance the methods of its application. In the treatment of endocervicitis, in chronic gonorrhea, over a period of three years we felt absolutely sure that we had at our disposal a method that was far superior to any other in clearing up this condition. In the last six months we have found that in some ways we were radically wrong; that the results we have obtained with the negative electrodes in the suprapubic and sacral regions were not the best, because that method does not get the penetration of the type of heat in the endocervical region which is sufficient to destroy the gonococci in an ideal manner. During the last six months, we have used instead of this method an autocondensation which makes the patient's body the negative electrode, so there is no heat lost at any point. The treatment of gonorrheal epididymitis by electrodiathermy is the most striking procedure I have ever seen. We do not need to insulate the patient in any way. It is simply a method of applying heat between the electrodes, so that this heat can be generalized within the body of the testis and epididymis and will either destroy the gonococcus or alleviate the gonorrheal infection so markedly after one or two treatments that the patient is relieved and can continue to work. He does not have to go to bed, and the procedure of epididymotomy will be employed very seldom when this is applied. In cases of gonorrheal urethritis in the male, when the autocondensation pad is used with the active electrode in the urethra, there is a chance of curing gonorrhea in one treatment. During the last four months we have had four cases, seen within the first twenty-four hours, in which two treatments given the same day, one in the morning and one in the afternoon, the urethra being heated to 110 F. for forty minutes at each treatment, has brought about cure. The other cases did not respond at all. All these cases were checked over very thoroughly, and proved to be gonorrheal urethritis before applying the heat. As to dilating a tuberculous bladder after the tuberculous kidney has been removed: the urethral and suprapubic application of diathermy, by increasing the vascularity of the bladder, will improve the patient more rapidly than anything I have ever seen used.

DR. ROBERT H. HERBST, Chicago: I had a case of adenocarcinoma of the bladder in which the tumor developed in the trigon, thus differing from Dr. Scholl's cases, all of which developed in the dome of the bladder. It is easier to explain the origin of the adenocarcinomas which develop in the trigon than those which develop in the dome of the bladder, where glandular structures are rarely, if ever, found. The tumor in my case was as large as a hen's egg, and was attached to the bladder wall by a thin, ribbon-like pedicle. This was so delicate that it tore away from the bladder wall while the finger was passing round the base to determine its origin, and left a small linear defect in the bladder wall not over a centimeter in length. Evidently this tumor originated in one of the mucous glands found in the region of the trigon and called by Alberran aberrant prostatic glands. This tumor, microscopically, was an adenocarcinoma, but from the standpoint of the patient could be considered clinically quite benign, because it grew out of the bladder wall rather than in it.

DR. W. B. DAKIN, Los Angeles: In treating tumors of the bladder we were inclined to try the cautery, just as in surgery. One case seemed to be an appropriate one, for the adjacent tissues were all involved and the cautery was used just as in tumors outside urology. About four weeks later, symptoms of intestinal obstruction occurred, and three or four weeks later the patient died from inanition and urosepsis.

DR. ARTHUR L. CHUTE, Boston: Concerning Dr. Bumpus' attempt to standardize malignant disease of the bladder: This is of the utmost importance, if it can be done. We know so little about the natural history of tumors of the bladder and how we may expect a given tumor of the bladder to act that, until such time as we do, we can judge but little of the value of our different attempts at cure. For instance, in 1921 I operated on two infiltrating growths of the lateral wall of the bladder that were apparently identical; they could not be removed; both were treated with radium. One man died in less than a year; the other, I am told, was without symptoms a short time ago. As soon as we can standardize the malignancy of bladder growths, we shall be able to draw definite conclusions as to the value of different methods of treatment.

DR. DANIEL N. EISENDRATH, Chicago: One point we are apt to forget in our treatment is the repeated examination of the renal function and blood during radium and deep roentgen-ray therapy. In a recent case, radium was employed in carcinoma of the prostate perineally and later suprapubically. The blood was not examined often enough. The patient began to have a rise in temperature soon after the last implantation of radium, and on examination of the blood we found only a marked leukopenia of 1,000 cells per cubic millimeter. The fever was due to a streptococcus tonsillitis and pulmonary infection. Toward the close of his illness, the leukopenia was 100 cells to the cubic millimeter. I simply mention this to show the necessity of constantly keeping control of the blood elements, the blood chemistry and the renal function in these cases.

DR. JAMES A. GARDNER, Buffalo: I hoped that diathermy would be a great improvement over fulguration. If diathermy will do better than radium and the roentgen ray, or will cause less septic infection, it will be a great advance. I am glad to have Dr. Bumpus say that we have some method of finding out how definitely malignant a tumor is. All of us have treated patients who have lived for some time. I wonder whether a proper diagnosis was made in these cases. Then

there are other cases in which we do almost nothing; but whatever we do is almost like placing a stick in a hornet's nest—it just stirs them up. When the degree of malignancy can be demonstrated, it will be of great aid.

Dr. Herman L. Kretschmer, Chicago: The point has been brought out that much confusion still exists in the classification of the pathology of these tumors. I agree with Dr. Chute that the great problem is to classify the pathology so that we shall know what we are talking about. It will be difficult for us to do this when the pathologists have such great difficulty in telling exactly the type of tumor even under the microscope. I wish that Dr. Walther, in closing, would clear up a little doubt in my mind about how he uses surgical diathermy in papillomas of the bladder.

Dr. Hermon C. Bumpus, Jr., Rochester, Minn.: I had two objects in presenting the paper. The first was to emphasize the necessity for an improved classification; the second, to obtain basic statistics that would serve as a yardstick with which we could measure the results accomplished by any specific method of treatment. I do not think that surgery, which has an operative mortality in this series of 240 cases, or 11.2 per cent., should be abandoned when we find that of 196 patients traced, 105, or 53 per cent., are living, three over six years, nine over five years, fourteen over four years, and sixteen over three years. Until the final results of treatment by diathermy are shown to be superior to those of surgery, the latter surely should not be entirely abandoned.

Dr. H. W. E. Walther, New Orleans: In answer to Dr. Kretschmer's question: In the series that I reported, we put the electrode right into the mass and then turned on the current. We did not fulgurate.

A PECULIAR CRYSTALLINE PROTEIN IN HUMAN URINE*

LUDVIG HEKTOEN, M.D.
HERMAN L. KRETSCHMER, M.D.
AND
WILLIAM H. WELKER, Ph.D.
CHICAGO

REPORT OF CASE

A man, aged 57, an engineer; admitted to the hospital in January, 1924, had typhoid fever twenty-five years before, and when young had had gonorrhea, from which he recovered without complications. His wife was living, and had never been pregnant.

The chief complaints were nocturia, dysuria, backache, a small, weak stream, pallor and drowsiness, nervousness, swelling of the eyelids, and one attack of complete retention of urine.

This illness began four years before admission, when he had complete retention of urine. His physician catheterized him twice a day for a week, when sounds were passed, after which he was able himself to empty the bladder. The urinary trouble became worse again a few weeks before entering the hospital following a cold, and the patient urinated every hour or hour and a half during the day, and arose from three to four times at night. He had some pain, which was rather severe at the neck of the bladder, and had to strain a good deal to start the stream; there was poor projection and a small stream for some time. Swelling of the eyelids and pallor had been present for a long time, and of late the patient had noticed that he was drowsy, especially after eating.

The external genitalia were normal; the left inguinal region was fuller than the right; the prostate was much enlarged in both lobes, but it was soft and smooth, and there were no definite signs of carcinoma; on rectal examination, the prostate was about six times the normal size; the seminal vesicles were not felt. Cystoscopic examination showed two large lateral lobes and a moderate sized median lobe; general trabeculation of the bladder with some cystitis, and residual urine from 125 to 210 c.c. There was no evidence of stone in the urinary tract on roentgen-ray examination.

The blood examination revealed: red blood cells, 2,560,000; leukocytes, 5,600, and hemoglobin, 44 per cent. The blood gave similar results on two subsequent examinations; on one occasion, the leukocytes consisted of 66 per cent. neutrophils, 28 per cent. small mononuclears, 4 per cent. large mononuclears, and 2 per cent. unclassified; there was marked anisocytosis and poikilocytosis; megaloblasts were rare. Tests of blood gave urea 68; uric acid, 9.1; creatinin, 2.95, and nonprotein nitrogen, 56. In the Wassermann test, the serum proved to be anticomplementary. The systolic pressure was 158; diastolic, 90.

No indications of bone changes were present in the ribs, pelvis, skull or long bones on roentgen-ray examination.

No direct evidences of carcinoma of the stomach were obtained on careful examination, and no final diagnosis was made. Unfortunately, the patient left the hospital, and died in February, 1924; no necropsy was done.

ISOLATION OF CRYSTALLINE PROTEIN

Specimens of urine, preserved with toluene, were saturated to 40 per cent. with ammonium sulphate, and left overnight. The first sample thus treated showed globular crystalline masses adhering to the sides of the vessel. The filtrate, after twenty-four hours more, contained an abundant amount of octahedral crystals (probably of the tetragonal system) as shown in the accompanying illustration. The crystals were so perfect in form that they seemed to be inorganic in character. On treatment with the biuret reagent, however, they took up the typical biuret color.

These crystals are soluble in water; they become insoluble in water by washing with alcohol, but dissolve readily in 0.5 per cent. sodium carbonate solution. The protein used in the precipitin tests was crystalized three times, once from urine, and twice from water solutions, and the solution of the third crop of crystals was dialyzed free from ammonium sulphate against distilled water.

This protein is almost completely soluble in water in the proportion of 1 gm. to 100 c.c. of water. The solution has a slight opalescence. A few drops of 0.5 per cent. sodium carbonate dissipates the opalescence, and causes the undissolved residue to dissolve.

The neutral opalescent solution gives the following reactions: strong biuret, positive Milton, positive Hopkins-Cole, strong xanthoproteic, positive Liebermann, negative Molisch, and an appreciable test for loosely combined sulphur.

When heated slowly, a marked turbidity appears at about 40 C., and complete flocculation occurs at 45 C. Only a small amount is redissolved when heated to the boiling point. The addition of sodium chlorid and urea, in certain proportions, causes solution of the precipitate at the boiling point, with reprecipitation on cooling. Other proportions of these compounds prevent coagulation. In the specimens of urine tested, very little of the coagulum went into solution when its temperature was raised above the point at which its coagulum formed, and consequently only a slight opalescence occurred on cooling.

The urine also contained small quantities, not accurately determined of other proteins.

PRECIPITIN TESTS

The urine of the patient at various times gave precipitate with a strong serum against a Bence-Jones pro-

* From the John McCormick Institute for Infectious Diseases, the Presbyterian Hospital and the Laboratory of Physiological Chemistry, University of Illinois College of Medicine.

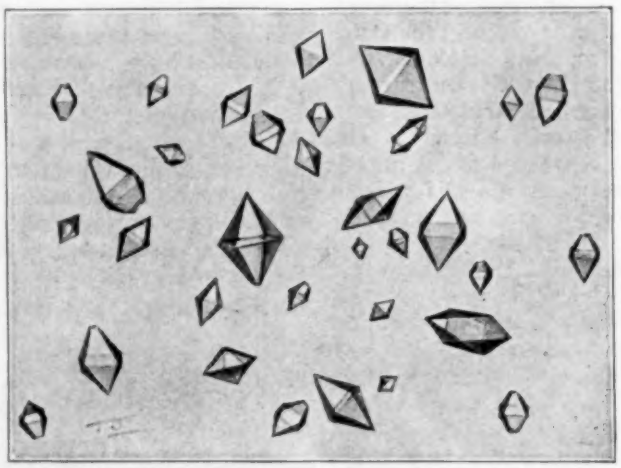
tein,[1] but not in higher dilutions than one part of urine in 100 parts of salt solution. Solutions of the urinary proteins other than the crystalline protein that is described more fully further on also gave reactions for Bence-Jones protein and for human pseudoglobulin.

*Precipitin Reactions of the Recrystallized Urinary Protein**

Antigens	Precipitin Serum for Bence-Jones Protein	Precipitin Serum for Recrystallized Protein from Urine
Bence-Jones protein	160,000	0
Patient's urine	80	3,200
Crystallized protein from urine	1,000	320,000
Noel Paton protein	0	0†
Human serum	0	0
Human serum proteins (euglobulin, pseudoglobulin, albumin)	0	0

* The figures give the highest dilutions of the antigens in contact with which the precipitin serums formed definite precipitates after one hour at room temperature; 0 = no reaction.
† See text.

A rabbit injected intravenously five times at intervals of three days, beginning with 2 c.c. of urine and increasing with 2 c.c. at each subsequent injection, on the fourth day after the last injection gave a serum that precipitated with one part of urine in 2,500 parts of salt solution, and also with human serum, human pseudoglobulin and albumin, but not with Bence-Jones protein. The precipitins for the serum proteins were absorbed specifically by mixing the serum with equal parts of a 1:1,000 solution of pseudoglobulin or albumin, without materially reducing the precipitin for the peculiar protein in the urine. This antiserum reacted with solutions of the recrystallized protein from the urine, one part in more than 100,000 parts of salt solution, and solutions of this protein did not react with potent antiserums for human serum or serum proteins.



Crystals of peculiar urinary protein.

A rabbit was injected intravenously with 1, 2, 3, 4 and 6 c.c. of a 1 per cent. solution of the recrystallized protein, at intervals of three days, respectively; four days after the last injection, the serum did not seem to contain any precipitins, and the rabbit was given 10 c.c., the next day 15 c.c., and the next day 20 c.c. intravenously of the solution. On the fourth day after the last injection, the serum was rich in specific precipitin, as shown in the accompanying table.

Our Bence-Jones protein appears to be quite different from the peculiar urinary protein, and the fact that precipitin serum for Bence-Jones protein reacted with the urine, solutions of the urinary proteins other than the crystalline, and in a 1:1,000 solution of the crystalline protein itself is difficult to explain otherwise than as being due to the presence of a small amount of Bence-Jones protein in the urine, which was carried along with the crystals, because all trace of Bence-Jones protein was removed on the addition of Bence-Jones precipitin serum, and this without any other recognizable effect on the mixture.

As seen in the table, the peculiar protein from urine in our case does not seem to be related to the Noel Paton protein[2] in its precipitin reaction. In one test, the Noel Paton protein reacted in a dilution of 1:12,800 with the serum against our crystalline protein, but this probably was due to some error, because in two subsequent tests with the same precipitin serum, new solutions of the Noel Paton protein gave no reactions.

COMMENT

The crystalline protein described now differs from the Noel Paton protein in that it dissolves in water, whereas the Noel Paton does not; it does not precipitate or crystallize out on dialysis of its solution as does the Noel Paton protein; the coagulation temperature is 45 C., while that of the Noel Paton protein is around 60 C.

Solubility in water and the behavior on dialysis of dilute solution of our protein definitely exclude it from the true globulins. Its crystal form is different not only from the Noel Paton protein but from any of the other proteins from urine that have been prepared in crystal form.[3] In remaining practically insoluble on raising the temperature after coagulation, except in certain concentrations of salt and urea, it differs from the Bence-Jones protein. In its solubility and coagulability it agrees with the albumins, but, in its precipitability below 60 per cent. saturation with ammonium sulphate, it differs from the albumins.

In its precipitation limits with ammonium sulphate and its solubilities, our protein resembles some of the albumoses. No albumoses, however, have been prepared as yet in crystalline form. Huppert[4] believed at first that the Noel Paton protein belonged to the group of heteroalbumoses, but later[5] concluded that it was a globulin.

Our protein acts as a specific precipitinogen, and it appears to be distinct from the Bence-Jones protein, the Noel Paton protein and the common human serum proteins.

1. Hektoen, Ludvig; and Welker, W. H.: Further Observations on Precipitin Reaction of Bence-Jones Protein, J. Infect. Dis. **34**: 440-446 (May) 1924.

2. Paton, D. N.: On a Crystalline Globulin Occurring in Human Urine, Proc. Roy. Soc. Edinburgh **19**: 102, 1892. Bramwell, Byrom; and Paton, D. N.: On a Crystalline Globulin Occurring in the Human Urine, Rep. Lab. Roy. Coll. Phys. Edinburgh **4**: 47, 1892. Everett, H. S.: Bayne-Jones, S.; and Wilson, D. W.: Precipitin Reactions of Crystalline Globulin from Human Urine, Bull. Johns Hopkins Hosp. **34**: 385 (Nov.) 1923. We obtained samples of the original Noel Paton protein from the latter investigators, who found that it differs from Bence-Jones protein and human serum in the precipitin reaction.

3. Footnotes 1 and 2. Magnus and Levy: Ueber den Bence Jones'schen Eiweisskörper, Ztschr. f. physiol. Chem. **30**: 200, 1900. Grutterink and de Graaf: Ueber die Darstellung einer krystallinischen Harnalbumose, ibid. **34**: 393, 1901; **46**: 472, 1905. Schumm and Kimmerle: Ueber das Vorkommen eines krystallisierbaren nicht koagulierbaren Eiweisstoffes im Harn bei einem Falle von Magencarcinom, Ztschr. f. physiol. Chem. (Hoppe-Seyler) **92**: 1, 1914. Walters, Waltman: Bence-Jones Proteinuria, J. A. M. A. **76**: 641 (March) 1921. Krauss, E.: Studien zur Bence Jones'schen Albuminurie, Deutsch. Arch. f. klin. Med. **137**: 257, 1921.

4. Huppert: Ueber einen Fall von Albumosurie, Ztschr. f. physiol. Chem. **22**: 500, 1896.

5. Huppert: Ueber den Noel Paton'schen Eiweisskörper, Centralbl. f. d. med. Wissensch. **36**: 481, 1898.

SUMMARY

From the urine of a patient with prostatic enlargement and a grave anemia there was obtained a peculiar protein with these characteristics: It readily forms octahedral crystals, which probably belong to the tetragonal system; it is soluble in water; it is coagulated and rendered insoluble at 45 c.; it is precipitated from solution below 60 per cent. saturation with ammonium sulphate, and it is specific in its precipitin reaction. It is of interest to note that, associated in the urine with this protein, was a small amount of Bence-Jones protein.

THE MICROSCOPIC DIAGNOSIS OF THE DYSENTERIES AT THEIR ONSET

FRANK G. HAUGHWOUT
Protozoologist and Chief, Section of Parasitology, Bureau of Science of the Government of the Philippine Islands
MANILA, P. I.

In the course of a recent conversation with a clinical practitioner from the United States, concerning some of the problems arising in the practical management of dysentery, I was amazed to hear from him the statement, which he attributed to a prominent serologist, that treatment of bacillary dysentery with serum was impracticable because it could not be administered sufficiently early in the attack to be really effective. The reasons for this, he said, were attributed to the impossibility of making an accurate diagnosis under from forty-eight to seventy-two hours by bacteriologic methods, and the rather low proportion of cases that yielded a growth of *Bacillus dysenteriae* even under favorable conditions. I informed him that in Manila we not only are able to make a correct diagnosis of the condition within two or three hours of the onset, but that our administration of serum is attended by exceedingly satisfactory clinical results. This, I told him, we accomplished by the microscopic inspection of the cellular exudate, which afforded criteria that enabled a quick and reliable diagnosis of bacillary dysentery, and sharply differentiated it from the protozoal dysenteries. He expressed a courteous skepticism which, however, I was able to dispel by a series of microscopic demonstrations on cases that he was able to study at the bedside.

For several years, it has been a matter of surprise to me to observe that men in the various civilian and governmental medical services, though well equipped in the general sense, have come to the Philippine Islands totally lacking in knowledge of the present-day methods in the differential diagnosis of the dysenteries. Such instruction as they have had in the morphology and physiology of the intestinal amebas of man appears, in most instances, to have either faded from their consciousness or to have remained there is such form as to be inapplicable in a practical sense. The only laboratory method for the diagnosis of bacillary dysentery that appears to have been familiar to them has lain in the attempt to isolate the causative organism by bacteriologic methods. In consequence, much of my time during the last few years has been spent in the correction of conditions that have arisen as a result of this lack of knowledge.

In my opinion, entirely too much has been written for the consumption of the general practitioner on amebiasis and amebic dysentery. Until recently, the American literature has laid the greater stress on the relatively rare amebic dysentery, until it has almost submerged the greater problem, bacillary dysentery. Most of the papers that have been written as aids in the identification of intestinal protozoa, excellent as are many of them, are, in a large sense, out of place in the purely clinical journals. Their tendency is to bewilder the practitioner with a maze of cytologic detail that it rarely is possible to confirm under the conditions that prevail in most laboratories. This is constantly reflected in the current literature. When these papers are prepared and illustrated by men of broad experience, they are of inestimable value to men capable of assimilating them, but very little protozoology is learned from printed descriptions and figures. Unfortunately, there arise from time to time, enthusiasts who feel impelled to give expression to their literary and artistic talents and who thereupon proceed to describe inadequately and incorrectly figure organisms that already have been described with greater fidelity by more experienced workers. In consequence, the hardest task that confronts the protozoologist today lies in the constant battle he must wage against this flood of inaccuracy and misconception. It sows its seeds of false impressions in the minds of many earnest laboratory workers and clinicians, and reaps its toll in suffering and expense to luckless human beings.

My only purpose here is to direct attention to the established fact that it is possible for any physician who has a microscope and knows how to use it to make a correct and early differential diagnosis of dysentery by inspection of the cellular exudate, to direct attention to the literature on the subject that has accumulated since 1917, and to urge the more general application of the method in the United States.

ESSENTIALS IN MANAGEMENT

Three essentials are involved in the successful management of a case of dysentery:

1. Its differentiation from acute diarrhea or other gastro-intestinal disorders of nonspecific origin.
2. The early and accurate determination of the type of dysentery—whether bacillary or protozoal.
3. Prompt, adequate and sustained treatment with the appropriate remedy as indicated by the laboratory findings, together with the treatment of accompanying complications. This should be succeeded by a period of microscopic supervision during the postdysentery stage, and until such time as microscopic evidence of ulcerative process is no longer obtainable. This applies to bacillary, as well as protozoal, dysentery.

In the absence of an access of exceptional severity, there is little need or, indeed, excuse if these principles are observed, for losing a case of dysentery, provided the diagnosis is made promptly and no untoward complicating factor exists. A fatal outcome in dysentery, therefore, usually is due to one or more of the following causes:

1. Delay on the part of the patient in seeking medical advice.
2. Failure to make a correct differential diagnosis, and, in consequence, treatment by the wrong method.
3. Failure promptly to administer treatment in adequate dosage.
4. Failure to treat complicating symptoms, such as dehydration in severe bacillary dysentery.
5. Inability to cope with early developing and overwhelming toxemia as seen in fulminating bacillary dysentery.

6. Neglect of secondary infection supervening on a primary bacillary or protozoal dysentery. This last contingency is by no means rare, and is, in my judgment, responsible for the loss of many patients and the prolonged invalidism of others, who have weathered the storm of their dysentery.

DIFFERENTIATION

Bacillary dysenteries caused by the Flexner strains of *Bacillus dysenteriae* frequently give rise to constitutional symptoms so mild that clinical differentiation of them from those of amebic dysentery is a practical impossibility. The rise of temperature is evanescent and may not exceed 1 degree, Fahrenheit. Prostration is not marked and there are no recognizable symptoms of toxemia. In short, the general clinical picture is essentially similar to that of amebic dysentery. For that reason it is a matter of rather common agreement, among men experienced in the diagnosis and treatment of dysentery, that it is unwise to treat a case of dysentery until the clinical diagnosis has been confirmed by microscopic study of the exudate. The microscopic diagnosis always is precedent to the clinical diagnosis in dysentery. In these days, when the microscopic diagnosis of dysentery can be made so rapidly and so accurately, there no longer is any reason why the final diagnosis should not be made in the proper place—the laboratory, and at the proper time—immediately after the onset of the disturbance.

For nearly ten years I have spent a considerable portion of my time in the study of the microscopic pictures presented by the exudates of various types of dysentery, as well as those to be observed in other disorders of the lower intestinal tract. During that time, I have had access to abundant material from patients suffering from all types of bacillary and protozoal dysentery, and from the sequelae of these conditions. In a large proportion of instances, I have been able to follow closely the clinical course of the cases and, on many occasions have been able to supplement these observations with a study of the anatomic lesions at necropsy. As a result of this, I not only am able to confirm the findings of Willmore and Shearman,[1] Bahr and Willmore,[2] Anderson[3] and others, but have been able to supplement them with observations of my own on bacillary and amebic dysentery as well as on balantidial dysentery, postdysenteric colitis and various types of nonspecific colitis and other pathologic conditions in the colon.[4] I also have taught the methods of cytodiagnosis to many medical officers in the United States Army and the Navy, as well as to physicians and laboratory men in the missionary, plantation and other services.

It has been a matter of surprise to me to note that, notwithstanding the enthusiastic response on the part of my pupils and the real missionary work they have sought to carry out in their own organizations, little attention seems to be given to the subject in America. This has been in rather striking contrast to the wide development of the method by the British workers. The object of this paper, as I have said, is to invite general study of the oustanding papers that have been written on the cytodiagnosis of dysentery, and to urge the routine application of the method in the United States as well as in other places.

The underlying principle of the method rests in the recognition of the two types of dysentery through the medium afforded by the cellular exudate that is produced as an expression of the pathologic conditions of the two processes. Bacillary dysentery is an acute, toxic, inflammatory involvement of the colonic mucosa caused by *Bacillus dysenteriae*. In consequence it gives rise to a rich, purulent exudate, consisting mainly of polymorphonuclear leukocytes (about 90 per cent.) and phagocytic endothelial macrophages. Other cells are present in small numbers. A large proportion of all these cells bear the marks of toxic necrosis, and stigmas that are characteristic of bacillary dysentery and no other intestinal disorder. On the other hand, amebic dysentery produces an exudate that bears a definite relation to the amount of secondary bacterial infection present, but which always is so scant in volume and so lacking in the characteristics of bacillary exudates that no confusion can possibly arise.

DIAGNOSIS

The diagnosis of bacillary dysentery, therefore, rests on the finding of an exudate exhibiting the characters already mentioned; that of amebic dysentery rests in the discovery of active tissue-dwelling forms of *Entamoeba histolytica* containing ingested red blood corpuscles in surroundings that make it clear that *E. histolytica*, and no other agent, is responsible for the dysenteric symptoms. Bacillary dysentery superimposed on an amebic dysentery produces an exudate of its own that is so massive and striking that it completely submerges the unobstrusive amebic exudate, which is quite proper since, under these conditions, treatment is first directed toward the bacillary involvement, the less urgent amebic process being dealt with later. It must not be forgotten that, while concomitant bacillary and amebic dysentery is exceedingly rare, still, in instances, *Entamoeba histolytica* may make its appearance in a bacillary exudate.

As I have covered the ground rather fully in recent publications,[5] and as the principal early publications of importance are readily accessible, I shall not here enter into a detailed discussion of the diagnostic method, but shall content myself with the presentation of evidence sufficient to establish the principle clearly. To that end, I shall introduce a few photomicrographs of fields in the exudates of dysentery cases. These cases were under complete clinical, bacteriologic and microscopic control, so that no reasonable doubt exists as to the correctness of the diagnosis in any case. None of the cases differed in any essential feature from the general run of cases of their type.

The case illustrated by Figure 1 was presented by a young man, an American, who was attacked with moderately severe abdominal cramps, accompanied by purging, about three hours before he presented himself at my laboratory. At that time, his bowel had become emptied of its fecal content, and the movements consisted of blood-streaked mucus. Some of this material

1. Willmore, J. G., and Sherman, C. H.: On the Differential Diagnosis of the Dysenteries: The Diagnostic Value of the Cell-Exudate in the Stools of Acute Amebic and Bacillary Dysentery, Lancet **2**: 200 (Aug. 17) 1918.

2. Bahr, Philip, and Willmore, J. G.: Dysentery in the Mediterranean Expeditionary Force (A Reply to G. B. Bartlett), Quart. J. Med. **11**: 349 (July) 1918.

3. Anderson, John: A Study of Dysentery in the Field, with Special Reference to the cytology of Bacillary Dysentery and Its Bearing on Early and Accurate Diagnosis, Lancet **2**: 998 (Nov. 12) 1921.

4. Haughwout, F. G.: Observations on the Microscopical Picture in Dysentery and Other Intestinal Disorders, Tr. Fifth Congress Far Eastern Assn. Trop. Med., Singapore, September, 1923, to be published; The Practical Microscopic Diagnosis of Dysentery, to be published from the Institute of Medical Research, Kuala Lumpur, F. M. S., 1924; Some Departures from the Typical Cell Pictures of Bacillary and Amebic Dysentery, with Speculations as to Their Significance, I, Philippine J. Sc., to be published.

5. These papers are in press and are to appear soon.

was inoculated on bacteriologic mediums, and later yielded a growth of *Bacillus dysenteriae* (Flexner). The patient's temperature reached a maximum of 102 F., but declined promptly after he had been under treatment with polyvalent antidysenteric serum for twenty-four hours. Convalescence was thoroughly established, and he was sent to the hills to recuperate on the eighth day.

Inspection of Figure 1 will show that the general background of the field is made up of polymorphonuclear leukocytes (neutrophils) in a marked state of toxic degeneration. Cellular damage, it will be noted, is quite uniform, nuclei and cytoplasm being equally involved. The nuclei of the leukocytes will be seen to have undergone the rather familiar annular degeneration, which, however, appears to me often to be especially marked in bacillary dysentery, although it is, of course, not a distinguishing characteristic of that condition. Other types of cells, as well as erythrocytes, will be seen to be distributed about the field. Prominent among the cells are numerous oval to elongated, and sometimes lobed cells, about twice the size of the polymorphonuclear leukocytes. Rounded to irregularly shaped dark staining masses lie in the cytoplasm of these cells. The darker of these bodies probably represent the remnants of cell nuclei that have been broken down in the process of toxic necrosis; the more lightly stained bodies that appear to lie in clear, vacuole-like spaces are erythrocytes that have been phagocytosed by the endothelial cells. Smaller, mononucleated cells of the plasma cell type, as well as extremely degenerated cells of uncertain origin, almost denuded of cytoplasm and nuclei, are in the field. The latter express the extreme effects of the toxic process produced by *Bacillus dysenteriae*, and are known as "ghost cells."

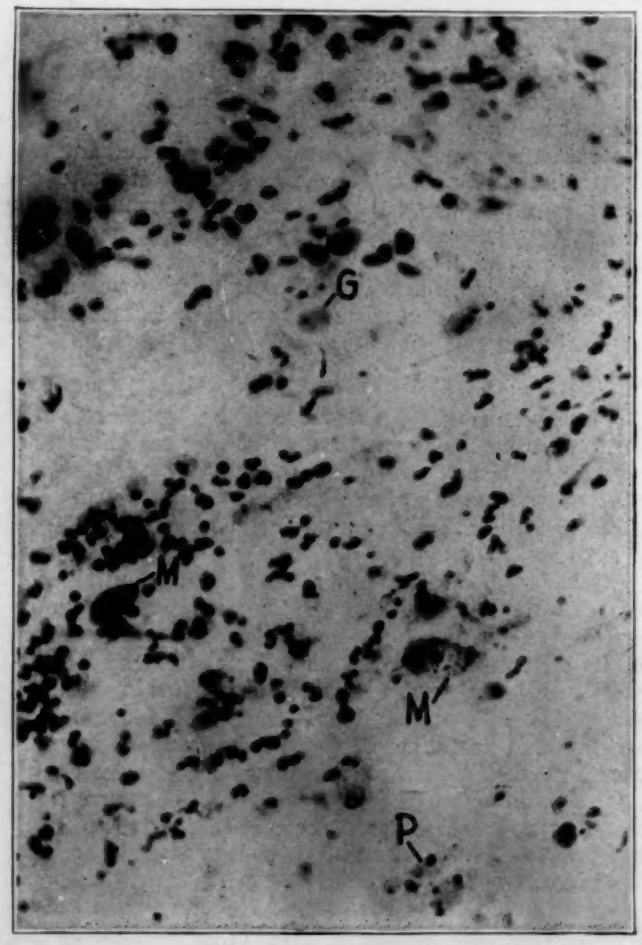


Fig. 1.—Thin smear of exudate of acute bacillary dysentery at onset: *M*, endothelial macrophages; *P*, degenerated plasma cells; *G*, ghost cell. General disintegration of all cells.

To recapitulate, Figure 1 presents all the essentials of what might be styled the bacillary cellular complex. The illustration shows: (1) a massive leukocytic exudate consisting principally of degenerated polymorphonuclear (neutrophil) cells; (2) erythrocytes; (3) phagocytic endothelial macrophage cells in appreciable numbers, all markedly degenerated; (4) plasma cells, and (5) a collection of cells in which toxic necrosis has progressed to the point of almost total cell destruction. The picture is that of intense reaction to a powerful bacterial invasion, and, in the presence of endothelial macrophages and "ghost cells," constitutes a reaction-picture that is seen in no intestinal disorder save bacillary dysentery.

From time to time, one meets cases in which this picture is slightly varied. The departure usually consists in variations in the numerical proportion in which the various types of cell are present; i. e., plasma cells may be so numerous as to form a very conspicuous feature of the field. When bacillary dysentery exists, however, the polymorphonuclear leukocyte—endothelial macrophage—ghost cell combination always can be assembled on microscopic study of the exudate; and the microscopist is completely justified in rendering a diagnosis of bacillary dysentery to the clinician. I never yet have seen *Bacillus dysenteriae* recovered from a purulent bowel exudate that did not contain endothelial macrophages. Therefore, they always must be sought, because occasionally one encounters cases in which a heavy purulent exudate is produced in connection with the activities of some bacterial organism other than *B. dysenteriae*. It is perfectly easy, in these rare instances, by the exercise of a little care, to distinguish such exudates from those of bacillary dysentery.

A totally different picture will be seen to be presented by Figure 2, which is a photomicrograph of a field in the mucosanguinolent exudate passed by a patient, a middle-aged man, an American, who was suffering from a rather exceptionally acute attack of amebic dysentery. It was the patient's first attack of dysentery, and the access was unaccompanied by any marked secondary bacterial infection of amebic ulcers. Throughout the period of acuteness, frequent attempts were made to cultivate *Bacillus dysenteriae* from the exudate of this case, but in no instance was the attempt successful, notwithstanding that the conditions for obtaining growth were most favorable.

The central figure in this picture is, of course, the trophozoite of *Entamoeba histolytica*. It will be seen to contain a number of partially digested erythrocytes. A Charcot-Leyden crystal appears in the field. Virtually all the other bodies in view are erythrocytes, which are to be recognized as the darker, homogeneous, circular to elongated bodies. Cells will easily be recognized by their nuclei. Few of them will be seen, and yet this is a quite characteristic microscopic picture of acute amebic dysentery, quite as characteristic in its way as is that of bacillary dysentery shown in Figure 1. Each represents the picture seen in the acute stage of the respective condition, and it is very clear that the two pictures bear not the slightest resemblance to one another.

The reason for this striking difference in the reaction of the human host to these two infections is, in principle, exceedingly simple; in fact, it already has been stated. The bacilliary infection is an acute inflammatory process, and, as such, leads to the production of large quantities of pus. The patient reacts also by discharging into the lumen of the bowel large numbers of characteristic endothelial cells. These form the groundwork of the picture, while the finishing touches are added by the bacillary toxins, which produce a type of cell degeneration that sets this exudate apart from all other intestinal exudates.

On the other hand, the action of tne ameba on the human organism is of a totally different nature. So far as we have evidence, no toxin is produced by the protozoon, and it is incapable of producing an inflammatory reaction per se in the tissues. Its attack on the intestine is purely through the action of the proteolytic enzymes it produces, and uses in the procuring and disgestion of its food. The effects of these enzymes do not extend beyond the zone in which it is gathering food. The consequence is that no particular type of cell is called forth from the wall of the intestine, and such cells as find their way from a small amebic ulcer and into the mucoid discharge are very apt to show evidence of the action of the digestive ferments at their periphery, and under the microscope look very much as if pieces had been bitten off them. The nucleus is the last portion of the cells to be affected, and, as a result, the exudate of amebic dysentery contains many of these partially destroyed cells—some of them consisting of little more than the nucleus, with a small remnant of the cytoplasm still adhering to it. These are called "pyknotic bodies." They are characteristic of protozoal dysentery, balantidial as well as amebic. However, no diagnosis of amebic dysentery should be made except on the finding of motile, tissue-dwelling forms of *Entamoeba histolytica.* The identification of this species in the presence of acute amebic dysentery is not at all a difficult matter if one is working with fresh material. The amebas are exceedingly active, showing lively movements of progression. If such amebas are found that contain erythrocytes in an active state of circulation in the endoplasm, they may for all practical purposes be designated *E. histolytica,* and the microscopist may rest serenely confident that he has made no mistake.

RELIABILITY OF DIAGNOSIS

Some writers have questioned the reliability of the foregoing criterion for the identification of *Entamoeba histolytica,* and it cannot be denied that it does not rest on a sound zoological basis. It is a makeshift, fortunately safe, that has been placed in the hands of the clinical microscopist who usually has to work with material that is degenerated and, accordingly, exceedingly difficult to identify on the basis of morphologic characters. However, the experience of a number of protozoologists who have had the opportunity to study large numbers of cases of amebic dysentery has been that the only ameba that ingests erythrocytes under the natural conditions obtaining in the bowel lumen is the trophozoite, or tissue-dwelling form, of *E. histolytica.* I never have seen erythrocytes in an intestinal ameba that showed evidence of being of a species other than *E. histolytica.* This is without prejudice to the statements of Kofoid and Swezy [6] concerning *Councilmania lafleuri.* I cannot discuss that organism at the present time because I never have seen it. It must be borne in mind that many of the reports of the ingestion of erythrocytes by species of ameba other than *E. histolytica* are based on experiments in the test tube, or on the slide with finger-blood. In some instances, the identity of the ameba involved is open to serious question.

Endothelial macrophages need never be confounded with amebas. To begin with, they occur only in a heavy leukocytic exudate such as one never sees in amebic dysentery; moreover, they are not motile, and the erythrocytes which many of them contain do not circulate about in the containing cell, but, instead, lie passively

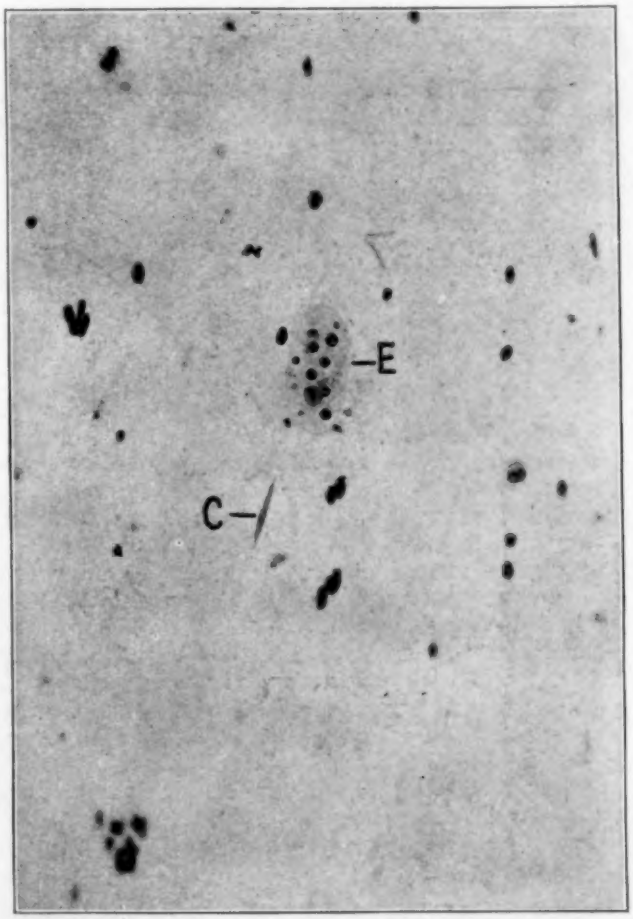


Fig. 2.—Exudate of acute amebic dysentery uncomplicated by secondary bacterial infection; *E,* trophozoite of Entamoeba histolytica containing remnants of ingested erythrocytes; *C,* Charcot-Leyden crystal.

in vacuole-like spaces that are sharply marked off from the remainder of the endoplasm.

In closing I shall present one more picture—that of amebic dysentery complicated by heavy secondary bacterial infection of the amebic ulcers. It will be seen that even under such circumstances, the leukocytic exudate cannot be mistaken for that of bacillary dysentery. The case in question was one of long standing which had resisted treatment to the extent that the patient, also an adult American, never had been rid of his infection, emetin having been administered in insufficient quantities to accomplish that result. In consequence, his colon clearly was studded with chronic amebic ulcers that had become secondarily infected with bacteria. Blood counts showed an almost constant leukocytosis of from 12,000 to 14,000 during the period

6. Kofoid, C. A., and Swezy, O.: On the Free, Encysted and Budding Stages of Councilmania Lafleuri, a Parasitic Amoeba of the Human Intestine, Univ. California Pub. Zool. **20**: 169 (June 23) 1921.

the patient was under observation. Notwithstanding the fact that numerous attempts were made by a bacteriologist of rather exceptional competence, *Bacillus dysenteriae* never was recovered from the stools.

A trophozoite of *Entamoeba histolytica* containing ingested erythrocytes will be seen in the illustration. It should be noted that the stool was feculent and contained bacteria in enormous numbers. The deeply staining round to elongated bodies are erythrocytes. Scattered over the field are a number of polymorphonuclear leukocytes. It will be noted that in the main these are intact. That is to say, they show no evidence of the toxic degeneration that characterizes the leukocytes of bacillary dysentery; likewise, very few of them

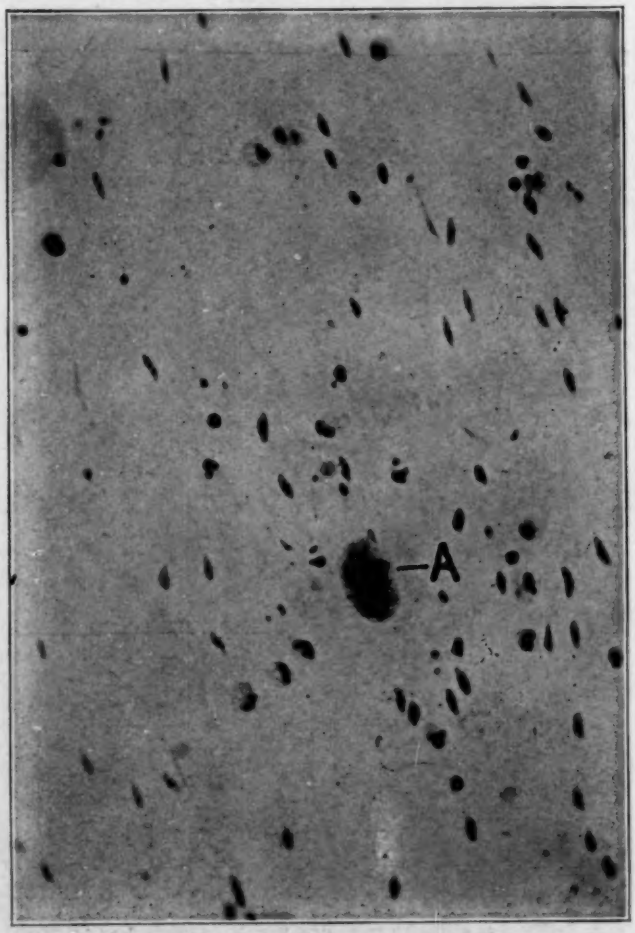


Fig. 3.—Exudate of acute amebic dysentery with heavy secondary bacterial infection of amebic ulcers; the polymorphonuclear leukocytes do not show the advanced necrotic changes shown by those in Figure 1. *A*, trophozoite of Entamoeba histolytica containing remnants of ingested erythrocytes.

show the evidence of proteolytic digestion characteristic of protozoal dysentery. In other words, most of them are leukocytes derived from bacterially infected amebic ulcers. Endothelial macrophages and "ghost cells" were totally lacking in the microscopic picture of this case. In short, even in the face of the numerous leukocytes, brief inspection of this exudate will serve to distinguish it, beyond all doubt, from the exudate of bacillary dysentery.

Balantidial dysentery and the various nondysenteric ulcerative affections of the colon all produce exudates that are characteristic of these processes. They are not sufficiently common, however, to justify treatment here, especially as I have discussed them in detail in other publications to which the reader already has been referred. The main thing to be borne in mind in connection with them is, that while their cellular content may, at times be exceedingly rich, it never can be confounded with that of bacillary dysentery if the microscopist has the picture of that exudate fixed firmly in his mind.

SUMMARY

The exudate of bacillary dysentery becomes organized within an hour or two of the onset of the first acute symptoms. It is characteristic of that disorder and of no other intestinal disturbance. It is readily recognized by a microscopist of even small experience, and it furnishes a perfectly safe and reliable guide to appropriate treatment.

The exudate of bacillary dysentery furnishes a reliable standard from which to judge the significance of other bowel exudates.

The exudate of protozoal dysentery is a guide to the probable extent of secondary bacterial infection of amebic ulcers. Its characters, in the presence of *Entamoeba histolytica,* make it possible to avoid confusing bacillary with amebic dysentery.

Application of the principles outlined above insures an accurate and early differential diagnosis in dysentery and, in the case of bacillary dysentery, makes it possible to apply specific treatment at the time when it will do the most good. It is equally accurate in amebic dysentery.

The uncertainty and delay contingent on the diagnosis of bacillary dysentery by the method of bacteriologic culture is abolished. For the practical purpose of treatment, the method of cytodiagnosis is more expeditious, more accurate and more dependable.

The photomicrographs that illustrate this paper were taken from stained preparations made by the author. The fields were selected and posed by him, and the photographs were taken by Major George R. Callender, M. C., U. S. Army, assigned to duty in the Philippine Islands on the U. S. Army Medical Research Board.

Pressure on Lip as Cause of Cancer.—Pressure of the pipestem long has been considered a plausible cause of epithelioma of the lip in man, but this growth also occurs in smokers of cigars or cigarets, and many cases have been reported in nonsmokers. The American Indian is said to be practically immune to cancer, yet he has always been a great pipe smoker. And what about the use of labrets or lip-plugs so widely distributed throughout the world and perpetuated since time immemorial? The Tlinkits of Alaska, the Eskimo, further north, the Botoccudos of East Brazil, the African women along the Nile and the Zambesi and around Lake Stefani all pierce or slit their lips and gradually stretch the openings by successively inserting wooden pegs of large dimensions as the lip apertures become more distended. Thus, discs of wood, shell, ivory, glass, quarts or metal, two or three inches in diameter, may be seen fixed stud-like in the upper lip, while cylindrical pendants, often weighing a quarter of a pound, drag, elongate, evert the lower lip, hideously exposing teeth and gums. There can be no doubt as to the irritation caused by these strange ornaments, which often turn the upper front teeth inward by their pressure. Yet never have they been accused of producing anything more serious than comicality, especially when the duck-billed girls start chattering and laughing. Furthermore, with regard to pressure of a short clay pipestem, considered as a possible cause of epithelioma of the lip, does the constant irritation produced by the bit in the mouth of horses give rise to malignant tumors either of tongue or lips?—L. W. Sambon: *Proc. Roy. Soc. Med.* **60**:112 (Sept.) 1924.

Clinical Notes, Suggestions, and New Instruments

ACCIDENTAL MALARIAL INFECTION IN SYPHILIS OF THE BRAIN *

LAURENCE E. HINES, M.D., CHICAGO

Recently foreign literature has had numerous accounts of the treatment of general paralysis with induced malarial infection. A case of syphilis of the brain, with death from

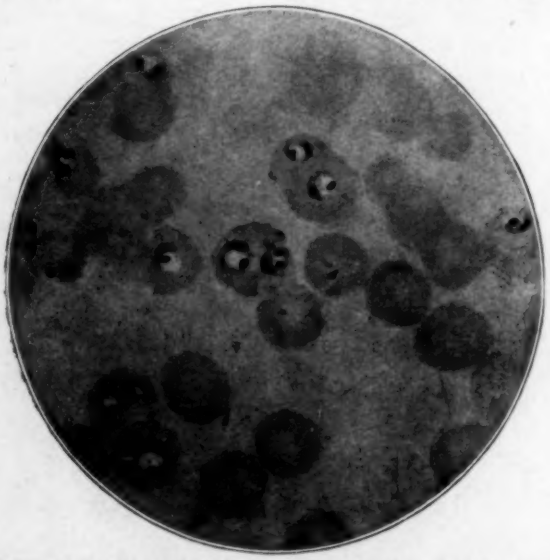


Fig. 1.—Blood smear showing numerous ring forms of estivo-autumnal malaria.

an accidental infection with estivo-autumnal malaria, is reported because it is a natural human experiment of interest in connection with this problem of treatment.

REPORT OF CASE

A chemist, aged 35, was admitted to St. Joseph's Hospital, May 17, 1924, complaining of fever, chills, sweats, weakness and vomiting. A few hours previous to entrance, the temperature was 104 F., but when admitted he had no fever. He had arrived in New York from Santo Domingo, May 8, in good health. The next day he had a high fever, drenching sweats and vague gastro-intestinal complaints. When first seen, he was confused mentally, and unable to give a consistent history of the course of his illness. He knew of no cases of malaria in the places where he had resided recently, and had taken no quinin as a prophylactic or curative measure.

The patient was well nourished, acutely ill and mentally confused. The eyeballs were prominent; the pupils were equal, regular and widely dilated, and reacted to light and in accommodation. There was profuse sweating of all parts of the skin. He was very restless and made continuous purposeless movements. There were no abnormal findings in the heart or lungs. There was no abdominal tenderness, and the liver could not be palpated. The spleen was not felt, but palpation below the left costal margin was resisted. There were no changes in the deep or superficial reflexes. On admittance, the temperature was 98 F.; pulse, 109, and respiration, 28. On the following morning, the temperature was 94.8 F.; pulse, 102, and respiration, 22. At 10 p. m., May 18, the temperature was 101.6 F.; pulse, 136, and respiration, 34. The temperature continued to rise rapidly, and shortly before death occurred, May 19 at 6 a. m., it was 105. The patient was in coma about twelve hours preceding death. Blood examination, May 17, showed: hemoglobin, 82 per cent.; erythrocytes, 4,590,000 per cubic millimeter; leukocytes, 13,100, 68 per cent. being polymorphonuclear neutrophils. There were no malarial parasites in the blood smears at this examination. On the following day at 12:15 p. m., the temperature started to rise, the leukocyte count was 20,300, and numerous ring forms of the estivo-autumnal parasite were found in the smears. A spinal puncture was made eighteen hours before death and a bloody fluid removed, under increased pressure. The blood in the spinal fluid prevented accurate cell counts, colloidal gold reaction and globulin tests, but a Wassermann test of the fluid was strongly positive, even when amounts of spinal fluid as low as 0.1 c.c. were used. The patient's death occurred forty hours after admission. He had received no quinin.

A necropsy was made five hours after death. The anatomic diagnosis was: estivo-autumnal malaria; diffuse malarial thrombosis (?) of capillaries of brain; edema and hyperemia of the brain and leptomeninges; chronic disseminated syphilitic leptomeningitis; malarial slaty pigmentation of the liver, spleen, pancreas, kidneys and bone marrow; acute hyperplasia of the spleen; cloudy swelling of all viscera; subperitoneal petechial hemorrhages; generalized icterus; edema of the lungs; moderate generalized anemia; chronic pleuritis; venipuncture wound of the left cubital fossa; spinal puncture wound of the back.

The detailed examination of the head revealed no changes of the deep scalp tissues. The calvarium was removed easily in the usual manner. There was a marked increase of fluid in the meninges and a well defined foramen magnum pressure furrow. Everywhere the convolutions of the brain were flattened and the intervening sulci narrowed. Moderate hyperemia of the small meningeal vessels was generally present. The leptomeninges were thin except for slight thickenings in the sulci along the vessels. There were a few depressed, stellate shaped, opaque scars in the pia-arachnoid of the frontal, parietal and temporal lobes. They varied in size from a pinhead to 4 mm., and were usually located at the juncture of sulci. There were no gross changes of the meninges that covered the base of the brain. There were no gross changes of the surfaces on serial coronal sections of

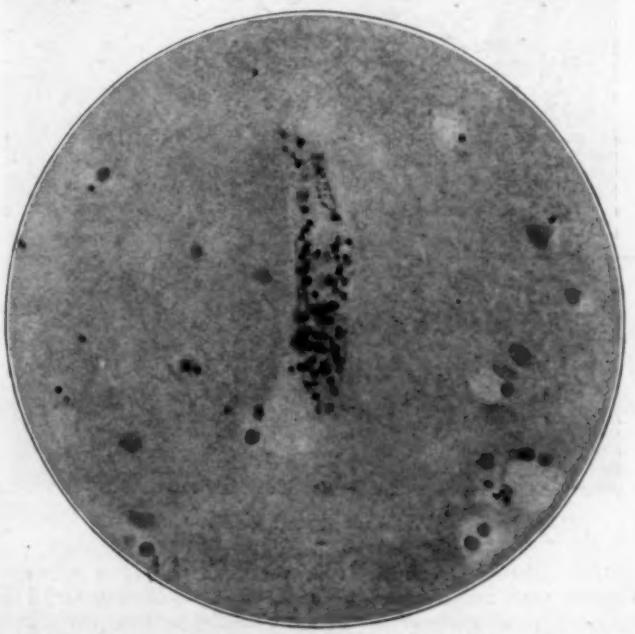


Fig. 2.—Section of brain showing capillary plugged with malarial forms and a few parasites in adventitial spaces of brain.

the cerebrum, brain stem and cerebellum, after fixation in formaldehyd. Microscopically, the lozenge shaped arachnoid scars were fibrous tissue, diffusely infiltrated with a small number of lymphocytes and plasma cells. There were no giant cells, necrotic tissue or epithelioid cells in these areas. They resembled the transitional, focal, syphilitic lesions of

* From St. Joseph's Hospital.

the arachnoid as described by LeCount and Dewey.[1] The blood vessels of the meninges were engorged with malarial forms, but there was no cellular increase around the vessels. There were no spirochetes demonstrated in Levaditi stained sections of the brain or leptomeninges. Sections were made from various parts of the cerebrum, basal nuclei, pons, cerebellum and medulla. Everywhere the capillaries were plugged with malarial parasites (Fig. 2). Occasional parasites were present in the adventitial spaces of the brain, but there was no evidence of cellular exudate, even around the capillaries.

SUMMARY

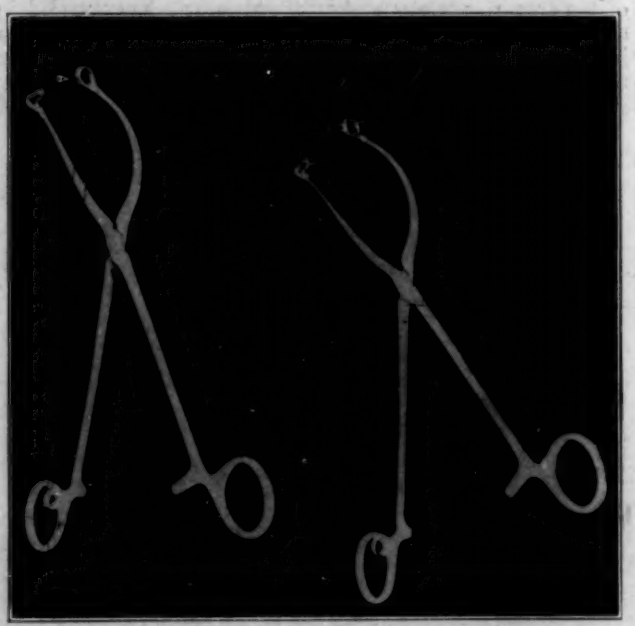
A man with chronic meningeal syphilis acquired estivo-autumnal malaria and died ten days after the onset. The lesions produced in the brain by the malaria, marked edema and hyperemia and engorgement of small blood vessels with malarial parasites, are the usual findings in the uncomplicated, acute, comatose types of malaria. There was a striking absence of cellular reaction in the brain, even around the parasite filled capillaries. The disseminated syphilitic, focal lesions of the arachnoid showed a slight cellular reaction, but this may be present, ordinarily, in pure syphilitic lesions. The Wassermann reaction of the spinal fluid was strongly positive.

The anatomic findings are those which might be produced by syphilis and malaria together, and there is no anatomic evidence that the syphilitic lesions have been changed by the malarial infection.

AUTOMATIC LIGATURE-CARRIER

O. A. Nelson, M.D., Seattle

About a year ago, I had made a ligature carrier for the renal pedicle, which some of my friends are using to good advantage in gallbladder operations and other inaccessible places.



Automatic ligature carrier.

The instrument, which is in the form of forceps, when loaded with the ligature to be used, can, if necessary, be passed by the sense of touch, the blades straddling the object to be ligated. Now, closing the instrument causes a loop of the ligature material to slip under a blunt hook on the opposite blade, so that when the instrument is opened and removed, a double ligature will be found about the object to be ligated.

The instrument is made so as to be free from sharp points or hooks, in order that it may be safely used in a wound near blood vessels or other important structures. The blades are curved inward so as to be able to encircle a fairly large sized object.

Any good instrument maker can make such a ligature carrier from a pair of sponge forceps, or they may be obtained from the Shaw Supply Company, Seattle.

904 Cobb Building.

1. LeCount, E. R., and Dewey, Kaethe: Syphilitic Leptomeningitis, J. Infect. Dis. **16**: 142 (March) 1915.

GANGRENE OF FINGER DUE TO SCLERODERMA*

Julius Gottesman, M.D., New York

There are few references in the literature relative to gangrene complicating scleroderma. Although trophic disturbances and superficial necroses, especially over prominent

Gangrene of finger due to scleroderma: Arrow points to line of demarcation in the bone.

and bony points, are quite common in this condition, actual gangrene involving large amounts of tissue is rarely mentioned. Cohen[1] recently described two cases that came under his observation, both involving the fingers. Mracek[2] and Buerger[3] mention the possibility of this complication.

The mechanism of the process is obvious. As the thickening and infiltration of the skin progress, there is increasing pressure on the blood vessels, gradually obliterating them and closing off the circulation.

REPORT OF CASE

D. E., a woman, aged 28, admitted to Montefiore Hospital, Sept. 1, 1922, complained of pain and stiffness of the joints, especially the small joints of the hands. The family history and past history was irrelevant. The present illness began about two and one half years before, when the patient noticed stiffness and limitation of motion of the right knee joint and the right hip joint. This was followed by stiffness of the small joints of the hands. The joints, though painful at times, were never red. She had received various treatments, but without success, the condition gradually becoming worse.

The hands and feet showed marked sclerodermic involvement, with circulatory disturbances of the affected parts. There was limitation of motion in all the joints of the upper extremities, due to sclerosis of the subcutaneous tissues. The joints of the lower extremities showed similar involvement.

Examination of the urine and sputum were negative. Blood examination revealed: hemoglobin, 75 per cent.; red blood corpuscles, 3,820,000; white blood corpuscles, 8,000; polymorphonuclears, 65 per cent.; mononuclears, 5 per cent.; lympho-

* From the Surgical Service of the Montefiore Hospital.

1. Cohen, Harry: Ann. Surg. **78**: 814 (Dec.) 1923.
2. Mracek: Handbuch der Hautkrankheit, **3**: 191.
3. Buerger, Leo: Circulatory Disturbances of the Extremities, Including Gangrene, Vasomotor and Trophic Disorders, Philadelphia, W. B. Saunders Company, 1922, p. 561.

cytes, 30 per cent. Chemical examination of the blood revealed: urea nitrogen, 7.6 mg. per hundred cubic centimeters; uric acid, 5.3 mg. per hundred cubic centimeters; blood sugar, 92 mg. per hundred cubic centimeters. A blood Wassermann reaction was negative.

The diagnosis was: scleroderma and chronic arthritis.

The patient continued in the hospital as an employee. Dec. 23, 1923, she was seen with a three weeks' history of pain, swelling and increasing discoloration of the distal half of the terminal phalanx of the right index finger. The condition was treated with local applications of boric acid ointment. Several days later, about 1 cm. of gangrenous finger, including part of the phalanx, was removed, leaving exposed a granulating surface through which projected the proximal part of the terminal phalanx. Treatment with boric acid ointment was continued, complete healing occurring, and leaving the patient with a shortened finger.

129 East Sixty-Ninth Street.

FOREIGN BODIES IN THE BLADDER

STERLING P. BOND, M.D., LITTLE ROCK, ARK.

April 12, 1924, a negro man, aged 58, was admitted from the outpatient department of the General Hospital suffering with severe cramps in the lower abdomen. He was much emaciated, and there were no physical findings except a few râles in the chest, and right epididymo-orchitis. Three tacks were found in a specimen of urine, and the nurse disclaimed all responsibility, saying that the urinal was clean. This being reported to the roentgenologist, a picture was taken of the bladder area at the time the patient was sent to the fluoroscope room. The roentgenologist, Dr. Rhinehart, made a diagnosis of foreign bodies in the region of the bladder. An 18 French sound was

Fig. 1.—Appearance of foreign bodies in bladder.

passed, and a grating click was felt when the instrument entered into the bladder. Rectal examination revealed no masses in the rectum, but grating was felt anterior to the rectal wall with the palpating finger in the rectum and the other hand on the bladder. April 14, a cystostomy was done under ether anesthesia. From a pocket in the posterosuperior portion of the bladder, slightly to the right, from eighty to ninety nails varying from 6 to 16 penny, weighing 350 gm., were removed, together with 20 gm. of cobblers' nails and carpet tacks; one roofing nail; several pieces of glass, the largest of which was one-half inch in breadth and three-fourths inch in length; bits of stone; a piece of enamel from a tooth; one carpal bone of a small animal, and two 3-inch screws. Two of the 12 penny nails had stone formation on the ends. The stones were about one-half inch in diameter. There were also feces, pus and partially digested fibers. A tube drain was attached. The patient reacted from the anesthetic, but continued to have pain. A second roentgen-ray examination showed two masses of tacks left in the region of the bladder. The patient was morphinized, given physiologic sodium chlorid solution intravenously, and on May 6 was again etherized; from thirty to forty tacks were removed from the postero-inferior portion of the bladder just above the trigon. The patient showed considerable shock, and the operation was suspended. He was put to bed, and stimulative measures were applied.

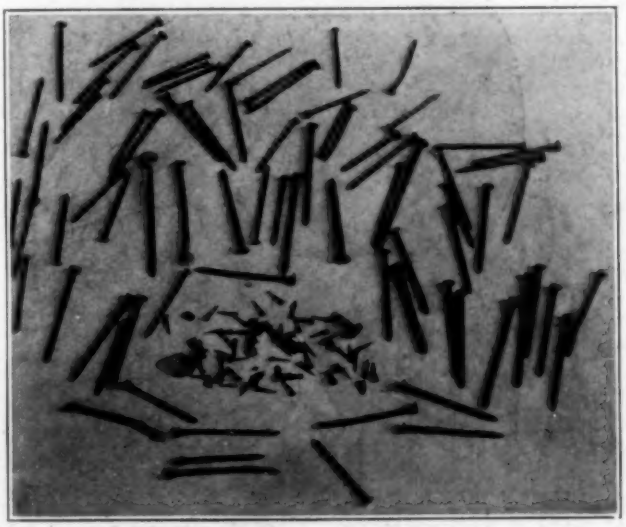


Fig. 2.—Foreign bodies removed from bladder.

May 12, the patient died, and postmortem examination revealed many adhesions, old and organized, throughout the abdominal cavity, the cecum being pulled high and to the right, and the ileum crossing underneath, with firm adhesions to the postperitoneal surface. At the proximal end there was an old walled-off perforation of the ileum just below the adhesions. In the ileum at this point there were eight tacks. This fistula was evidently of months' duration. There was a recent perforation, with a low-grade peritonitis from the sigmoid to the left side of the bladder of few days' duration.

It was a question among physicians here as to whether these articles were inserted through the urethra or swallowed. I am inclined to believe from the size of the objects, the caliber of the urethra, the fistula from the ileum to the bladder and a statement from the patient, that he got drunk and swallowed some tacks. These were passed through the alimentary canal, and it is a mere coincidence that they located in the urinary bladder instead of the peritoneal cavity, causing death immediately after the perforation.

INDIA INK IN THE MICROSCOPIC STUDY OF YEAST CELLS

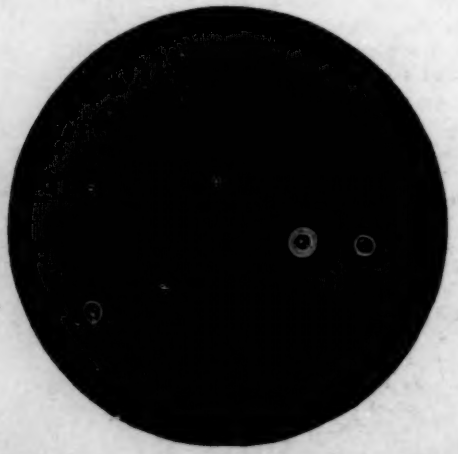
FRED D. WEIDMAN, M.D., AND WALTER FREEMAN, M.D., PHILADELPHIA

We came upon this method of study during an attempt to demonstrate in cultures the same invisible and unstainable mucinoid coating on *Torula histolytica*[1] that we saw in tissue, and which was only inferred to be there on account of the halo which appeared between the yeast cells and the surrounding tissue.

For demonstrating the coating by the ink method, one must work fast because the ink dries rapidly. A loopful of

1. Weidman, F. D., and Freeman, Walter: Cystic Infiltration of the Cerebral Gray Matter Caused by a Blastomyces, Arch. Neurol. & Psychiat. 9: 589-603 (May) 1923.

India ink is placed on a glass slide, and a loopful of the solid (or pasty) culture material is quickly emulsified in it. A large coverslip is quickly applied and pressed gently, to make the emulsion spread over as great an area as possible. The drop must be small; otherwise, too thick a film will result and the halo effect will be obscured. It is better that there shall be insufficient fluid to quite fill the space between the slide and the coverslip; and the thickness of this film should be adjusted to bring out the yeast cells by pressing on the coverslip with a needle.



The largest cell has a thick mucinous envelop, which can be seen outside of the (white) cell wall. The other cells are of about the same size as the first mentioned, but do not have the envelop.

By this technic, not only was the mucinous coating beautifully brought out, but also there was an unexpected benefit realized in that the eyes were rested during the prolonged examination of an otherwise glaring field. Results were not good when the ink was allowed to dry completely, as in the Burri method, or when certain other deeply colored embedding substances were tried, such as nigrosin, Congo red and acetic acid, and iron hematoxylin particles.

If the material to be examined is watery, like spinal fluid, the drop of the material should be almost, but not quite, evaporated to dryness before stirring in the India ink; otherwise, a gray instead of a black background will result. Even under these circumstances, the halo is generally gray instead of brilliant, as when working with the pasty culture material.

A NEW METHOD OF HANDLING SMALL BLADDER DIVERTICULA

FRANK S. SCHOONOVER, JR., M.D., FORT WORTH, TEXAS

Since Young first described the inversion method of handling small diverticula, it has been widely used by urologic surgeons. It has been customary in these cases, after the diverticulum has been inverted into the bladder, to cut the mucosal lining off and suture the bladder wall. I have found that it is sometimes difficult to pull these diverticula up with the ordinary hemostatic forceps but by progressive application of Allis forceps it has been possible to invert diverticula with a capacity of 15 c.c.

After the diverticulum has been pulled up so that the mucosa is on a level with the bladder wall, I have made this addition to the usual technic: Instead of excising the mucosa, a mattress suture has been placed in such a way that the loop of the suture passes through the bladder wall on each side of the original orifice of the diverticulum and is then tied tightly. This method brings the bladder wall of the opening together entirely outside the diverticulum itself. The mucosa of the diverticulum is slightly redundant, but is not disturbed.

This method is applicable only to that type of diverticulum in which the whole wall of the bladder is not included in the sac; that is, where the diverticulum is a true outpouching of the bladder mucosa through the muscular wall of the bladder. By further experience it may develop that even the first type of diverticulum may be advantageously handled in this way; but certainly the larger fixed sac will never come within this category.

The simplicity of this procedure and its efficiency are the two features that recommend it. It is hoped that other urologic surgeons will give the method a trial. The method has been called the Harris-Schoonover maneuver of handling small bladder diverticula. If it has been described before, I have not been able to find a note to that effect, and will be glad to acknowledge priority if such can be shown.

COEXISTENCE OF CONGENITAL AMPUTATIONS AND SYNDACTYLISM

H. A. COLEMAN, M.D., NEW PHILADELPHIA, OHIO

L. M., a man, aged 22, first came under my observation in 1916 when he was a boy of 14. At that time his mother had just given birth to twins. There were several children in the family, all the others being normal. At that time nothing had

Fig. 1.—Appearance of hands in 1916.

ever been done to the hands, which were as shown in Figure 1. Function was good; the thumbs were normal. Pitted amputation scars were visible. Where there was syndactylism, it was complete, not mere webbing. The amputations were

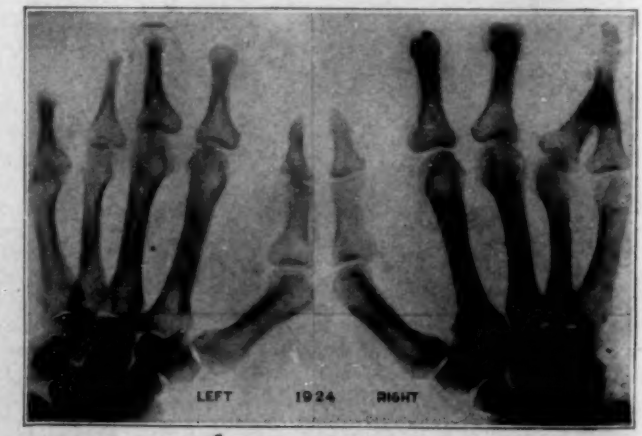


Fig. 2.—Separation of digits effected by plastic operation.

symmetrical, consisting of the two terminal phalanges of each finger.

In August, 1916, a plastic operation was attempted. The amount of separation of the digits was increased noticeably (Fig. 2), and the patient has good use of them, even playing ball.

It is interesting to note that I had a research bureau compile a bibliography of the coexistence of these conditions, and no

American reference was found. Nine papers[1] were reported, all of them in foreign countries and but one in the English language. The query naturally arises as to whether such a "double deformity" is a coincidence or whether there is some etiologic association of the two conditions.

SIMPLE METHOD OF TEMPORARILY SPLINTING FRACTURE OF LONG BONE

D. STODDARD DODMAN, M.D., NEW YORK

An emergency measure for temporarily splinting fractures of shafts of the long bones, which I am unable to find mentioned in surgical textbooks, is as follows: That part of the leg, arm or forearm which is fractured is encircled with one of the large weekly periodicals and tightly secured with a bandage. This seems to immobilize the fractured bone satisfactorily until such time as the patient can receive proper treatment.

772 Madison Avenue.

A CASE OF MYCETOMA

L. C. AUDRAIN, M.D., MAZATLAN, SINALOA, MEXICO

The report of a case of mycetoma by Dr. Pagenstecher[1] of San Antonio, Texas, leads me to report this case.

In Mexico, mycetoma, or "Madura foot," is quite common. One rarely sees these cases, however, until the absorption from the diseased, suppurating, repulsive foot has so thoroughly undermined the patient's general health that there is little choice left for the surgeon but to amputate. It has fallen to my lot to do this on five occasions, the patients ranging from 24 to 70 years of age.

A point of interest in these cases in this country is the prevailing notion that the affected person has been bewitched. A woman who wants a man who is living with some other woman, but cannot get him, takes out her spite in this way: She takes a piece of his clothing to some old woman, who puts it, together with a piece of green chili and a piece of tallow in an earthen vessel, stews the batch in a room lighted with black candles, and while brewing casts her spell. The Madura foot is the result. Without doubt, this superstition keeps many who have the disease from consulting a physician.

When a youth, aged 18, presented himself, on account of his age and splendid physical condition, aside from the diseased foot, I resolved to try some other treatment than the one recommended in the textbooks, amputation.

All signs, symptoms and laboratory findings, Wassermann reaction negative, and fish-eye bodies in the pus, made the diagnosis of mycetoma clear and beyond doubt. There were 124 discharging sinuses and scars, extending from the distal ends of the toes, on all the surfaces of the foot, up to the middle third of the calf. Around the ankle joint, and over the dorsal and plantar surfaces of the foot, the sinuses were so numerous and the swelling so intense that the foot had the shape of a small ham and it was almost impossible for the patient to flex or extend the foot or the toes. The toes were greatly separated, owing to the swelling. The foot was slightly painful, but was used for walking. There was no increase of pain on pressure.

Treatment was begun, Jan. 21, 1924, with 0.3 gm. of neo-arsphenamin. By February 25, six injections had been given, the last three of 0.75 gm. each. The patient rested one month, with absolutely no improvement. March 28, he was given 10 c.c. of 1 per cent. mercurochrome-220 soluble intravenously, and, four days later, 0.6 gm. of neo-arsphenamin intravenously. He has received an intravenous injection of neo-arsphenamin, mostly 0.75 gm., weekly, and 10 c.c. of 1 per cent. mercurochrome-220 soluble intravenously weekly, alternately, having received up to July 26 eighteen injections of each. There was never any reaction, salivation or diarrhea. The patient was discharged on the latter date. All the sinuses were healed, the swelling was all gone, the foot was freely movable, and to try out his ability to use it he walked 12 miles, August 6, with absolutely no pain or discomfort.

The report of this case is simply a suggestion, with the hope that we may have in this combination a cure other than amputation for mycetoma.

1. Kirmisson, E.: Amputation congénitale de la jambe gauche; sillon profond de la jambe droite, syndactylie de la main gauche, malformations des orteils, Rev. d'orthop. **11**: 67-70, 1900. Souto, V.: Sobre um caso de feto com amputacao congenita e syndactilia, Brazil-med. **32**: 172, 1918. Ficai: Amputation congénitale des doigts et syndactylie, Bull. et mém. Soc. anat. de Paris **81**: 492, 1906. Variot, G., and Leconte, M.: Amputation congénitale des doigts et des orteils avec syndactylie; sillon congénital des jambes, Bull. Soc. de pédiat. de Paris **9**: 106-109, 1907. Deeg: Rare Congenital Deformities; Spontaneous Amputation; Club Feet, Syndactylism, Beitr. z. klin. Chir. **126**: 429-431, 1922. Longuet, M.: Club-foot, syndactylie, sillons cutanés, amputation spontanée, survenus pendant la vie intrautérine; lésions d'origin e nerveuse, Compt. rend. Soc. de biol. **3**: 110-116, 1876, 1877. Monod: Amputation congénitale et syndactylie, Bull. et mém. Soc. de chir. de Paris **20**: 272-275, 1894; Syndactylie et amputations congénitales, Arch. de méd. d. enf. **2**: 552-555, 1899. Harris, H. E.: Intrauterine Amputation of Three Extremities; Webbed Fingers on the Hand of the Only Limb, Brit. J. Child. Dis. **1**: 502, 1904.

1. Pagenstecher, G. A.: Third Case of Mycetoma, J. A. M. A. **82**: 1692 (May 24) 1924.

Special Article

GLANDULAR THERAPY

THE PHYSIOLOGY OF THE THYROID GLAND*

GRAHAM LUSK, Sc.D., L.L.D.
NEW YORK

"The thyroid acts on oxidation as a pair of bellows rejuvenates a fire" (von Noorden, 1912). The active principle, thyroxin, has been isolated and its chemical formula determined as being a derivative of tryptophan, containing 65 per cent. of iodin (E. C. Kendall, 1914). Thyroxin "is a catalyst that accelerates the formation of a quantum of potential energy in the cells of the organism" (Plummer, 1915). The colloid contained within the vesicles of the thyroid gland is believed to be the only vehicle for storing this active substance in an inert manner (Marine). According to Marine a thyroid that contains less than 0.1 per cent. of iodin cannot be normal anatomically, and a thyroid that has continuously had an iodin store above 0.1 per cent. cannot be abnormal anatomically. As early as the twelfth century, goitrous enlargements of the thyroid were treated with iodin-containing sponges and seaweeds by Roger of Palermo at the medical school of Salerno. Recently, it has been proved that the enlargement of the thyroid in growing children living in goitrous localities may be entirely prevented by administering sodium iodid with their diet and, by the same agent, the enlargement may be greatly reduced in cases in which goiter has already developed (Marine). The normal thyroid gland manufactures thyroxin from its iodin supply, and this is especially needed at the time of puberty and during pregnancy. The nerves passing to the thyroid are not necessary to the normal functioning of the gland.

Friedrich Müller (in 1893) noted a greatly increased intake of food in exophthalmic goiter and Magnus-Levy two years later found that the oxygen consumption was much higher than normal.

Lack of thyroid secretion in the young results in undergrowth of the bones, dwarfism, cretinism, lack of muscular power, and undeveloped sex glands which are also functionally deficient. A pathologic condition develops under the skin (myxedema). The symptoms have been beautifully reproduced in lambs thyroidectomized when 2 months old (Sutherland Simpson). In

* This is the third of a series of articles prepared under the auspices of the Council on Pharmacy and Chemistry. When completed, the series will be published in pamphlet form.

the adult, the onset of hypothyroidism brings mental stupidity, myxedema, regression of the sex organs, and loss of muscular power, all of which are counteracted by thyroid medication.

Murray in 1891 showed the marked curative effect of thyroid extracts in myxedema, and this fact was independently confirmed by Mackenzie in 1892 and by Fox in the same year. In 1897 Magnus-Levy showed that there was a reduced heat production in myxedema, and that thyroid therapy gradually raised the oxidative processes to the normal level or above it.

A normally nourished man manifests in the post-absorptive state, and when reclining relaxed on a bed, a basal metabolism of 39.7 calories per square meter of body surface per hour, whereas cases of hyperthyroidism show increases in heat production of 25, 50 and 75 per cent. and more above this normal rate of metabolism in respectively moderate, severe, and very severe cases (Du Bois, 1916). In myxedema, a condition of hypothyroidism, the metabolism may be 35 per cent. below the normal, and there is loss of appetite. The administration of 1 mg. of thyroxin to a normal man of average weight or to a myxedematous patient will increase the heat production 2.8 per cent., and this increase of metabolism is a linear function of the quantity of thyroxin administered (Boothby). Thyroxin is therefore a powerful calorigenic principle. A patient with myxedema and presumably without thyroid secretion, whose metabolism was — 30 per cent. of the normal, received two intravenous injections of 8 and 16 mg. of thyroxin, four days apart. Two days after the second injection, the metabolism had slowly risen to the normal level. It then rose above normal, remaining above for twenty-four days, and next gradually declined to — 20 per cent. during a sixteen day period. From such experimental evidence it has been estimated that the consumption of thyroxin amounts to 0.5 mg. a day, and that normally the body contains 14 mg. of the active substance (Boothby; Plummer). The quantity of iodin in the tissues confirms this estimate (Kendall).

A patient with adenomatous goiter, manifesting pure hyperthyroidism as evidenced by a basal metabolism which was 60 per cent. above the normal, may be reduced to normal by operative removal of the diseased tissue (Plummer and Boothby). It would seem that, in the normal individual, some mechanism must exist for the preservation of a quantity of thyroxin in the body at a level corresponding to the level of heat production known as the basal metabolism.

Patients who suffer from severe exophthalmic goiter and adenomatous goiter require twice as many calories to perform a given piece of work, such as turning over in bed, as do normal persons (Boothby and Sandiford, 1923). They often require twice the amount of food needed by a normal individual in order to maintain their weight. Their protein metabolism does not appear to be increased.

The Romans recorded the girth of the neck of a young woman with a thread or tightly fitting necklace, and sought to determine defloration or pregnancy from the increase in the size of the neck, although they had no knowledge that this was due to an increase in the size of the thyroid gland (Garrison). The fall in metabolism after castration is said not to take place if the thyroid gland is first removed, indicating that the usual postoperative fall in heat production after castration is due to a reduction in the amount of thyroid secretion (Korenchewski).

When thyroid extracts are administered to rabbits and dogs, the liver contains less glycogen than normally (Parhon; Cramer). The inability of the liver to retain glycogen may explain the high blood sugar found after giving glucose in hyperthyroidism, as well as the glycosuria which is often observed.

The increases in protein and in total metabolism in pancreatic diabetes (Falta) and in phlorhizin diabetes (Lusk) do not take place if the thyroid has previously been extirpated, although the power to stimulate to a higher heat production after meat ingestion still persists.

The increases in metabolism after thyroxin and after epinephrin are entirely distinct effects (Aub). Administration of epinephrin does not stimulate the thyroid so that an increase in protein metabolism takes place (Lusk).

It should be mentioned that the thyroid and the hypophysis have many common activities in promoting body development and growth, so that it has been suggested that a vicarious function may exist between the two glands.

Any active influences of the thyroid on the thymus and the pancreas are speculative and improbable.

CHEMISTRY OF THE THYROID GLAND

EDWARD C. KENDALL, PH.D.
ROCHESTER, MINN.

In 1895, Baumann discovered that iodin is a normal constituent of the thyroid gland. Ever since this discovery, the chemistry of the gland has centered around the iodin-containing compound. No compound isolated from the gland and not containing iodin has been shown to have physiologic activity similar to that of desiccated thyroid. The proteins of the gland have been fractioned by Oswald and others, and a globulin has been obtained which Oswald named thyreoglobulin. The iodin content of this product is slightly higher than that of the desiccated thyroid, and clinicians and physiologists agree that thyreoglobulin possesses the entire activity of the thyroid.

Iodothyrin was obtained by Baumann by destroying the proteins with 10 per cent. sulphuric acid. A mixture of substances was obtained which contained about 9 per cent. of iodin, and while relieving hypothyroidism under some conditions, iodothyrin has not been regarded as the pure active constituent of the thyroid gland. Chemical evidence that iodothyrin is not a single substance was secured by the isolation in pure crystalline form of a compound containing 65 per cent. of iodin. This compound was isolated by Kendall in 1914, and was named thyroxin.

Thyroxin is a white, crystalline compound, exceedingly insoluble in water. It is soluble to the extent of about one part in 1,000,000 parts of water. It is not soluble in either sodium bicarbonate or sodium carbonate, but dissolves very easily in dilute sodium hydroxid. It is insoluble in alcohol, acetone, benzene, ether, and in all ordinary organic solvents. It is readily soluble in alcohol in the presence of mineral acids. Its most significant properties are expressed by the combination of weak acidic groups and a powerful amino group, whose presence is made manifest especially in a neutral water solution. Its empiric formula is $C_{11}H_{10}O_3NI_3$, and its structural formula has been shown to be 3, 5, 6 trihydro, 4, 5, 6 tri-iodo, 2 oxy,

3 indol propionic acid. It is characterized by the following chemical reactions:

1. It differs from other members of the indol family in the great ease with which the pyrrol ring opens by the addition of water and exists in the open-ring form.

2. It has the power to form a salt through its amino group with weak organic acids. It even forms a carbonate when carbon dioxid is passed through a solution of its sodium salt.

3. Thyroxin is easily oxidized and reduced at the hydrogen-ion concentration of neutral water.

4. The three atoms of iodin in the molecule are remarkably stable. They are reduced with difficulty in acid solution, and are not at all removed by prolonged boiling in 5 per cent. sodium hydroxid.

The chemical investigation of the thyroid has five objectives: (1) isolation of the active constituent; (2) its identification; (3) its synthesis; (4) study of its chemical reactions in vitro and in vivo, and (5) application of this knowledge to the study and treatment of thyroid diseases.

No detailed report of the progress will be made in this article except to say that the method of isolation is being applied on a commercial scale; that the identification has been carried to a point justifying attempts to synthesize thyroxin, and that the actual synthesis of a large number of compounds very closely related to thyroxin has been accomplished. Details of the manner in which thyroxin functions in the tissues will not be discussed, nor will the application of this work to the probable explanation of exophthalmic goiter be given.

It is possible, however, to say something concerning the relation of thyroxin to the physiologic activity of the thyroid. Pure crystalline thyroxin given intravenously will relieve every symptom of myxedema and cretinism in a manner and to a degree equal to desiccated thyroid. It will produce an increase in the basal metabolic rate that is in proportion to the amount injected, within certain limits. It is not necessary to assume the presence of any other substance in the gland to explain the physiologic activity of the thyroid. Therefore, if any other substance is present, it must act in a manner precisely the same as thyroxin, its effect is measured as more or less of the same quantity, and it does not differ in the quality or nature of its action from thyroxin.

The results of Hunt are conclusive evidence that no part of the iodin in the gland is physiologically inactive; but when a gland is boiled with sodium hydroxid, the amount of iodin that appears to be present as thyroxin varies from 5 to 70 per cent. of the total iodin. The only interpretation of these two findings is to regard the portion of the total iodin that is unstable to sodium hydroxid as possessing physiologic activity equal to or slightly greater than that of thyroxin. From the results of the synthetic production of substances closely related to thyroxin, it appears certain that this iodin compound occurring in the thyroid and possessing the physiologic activity of thyroxin, but with the iodin attached so loosely that sodium hydroxid breaks it off, is simply thyroxin existing in another, that is, an oxidized form.

The proof of this can be definitely established when the proper synthetic substances become available, and any expression of opinion at this time is necessarily speculation. However, the progress made in the synthetic work justifies our hopes for rapid completion of this phase of the work, at which time further report will be made which will make clear the relation between thyroxin and the other physiologically active substances in the normal as well as in the abnormal gland. It can be stated definitely at this time, however, that the organic nucleus to which the iodin is attached can produce an increase in the basal metabolic rate without having any iodin attached to the molecule. Therefore, the function of the iodin is to sensitize or accentuate and increase the physiologic activity of this organic nucleus.

(To be continued)

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

W. A. PUCKNER, SECRETARY.

METAPHEN.— Bisacetoxymercuri-4-nitro-2-cresol. $(CH_2COOHg)_2$: $(C_6H.CH_3.OH.NO_2)$. Metaphen contains from 58 to 60 per cent. of mercury in organic combination.

Actions and Uses.—Metaphen is a germicide, more powerful than mercuric chloride and certain organic mercury compounds when tested on cultures of *Staphylococcus aureus* and *Bacillus typhosus*. It is stated to be relatively nonirritating when applied to mucous membranes or the skin and to be without deleterious action on metallic instruments or rubber. Metaphen is claimed to be relatively nontoxic: white rats were found to tolerate doses of 0.004 Gm. per Kg. when injected intravenously and to tolerate (with but slight pain) doses of 0.03 Gm. per Kg. when injected intramuscularly.

Metaphen is proposed for use in the treatment of gonorrhea, infections of the eye, for skin sterilization and for sterilization of instruments and rubber.

Dosage.—Solutions of metaphen in water are prepared with the aid of sodium hydroxide. For disinfection of instruments solutions of 1:5,000 to 1:1,000; for application to the skin solutions of 1:5,000 to 1:1,000; for ophthalmological use solutions of 1:15,000 to 1:10,000 and for urethral irrigation solutions of 1:5,000 to 1:10,000 are proposed.

Manufactured by the Abbott Laboratories, Chicago. U. S. patent and U. S. trademark applied for.

Metaphen Solution 1:5,000: 1 part of metaphen dissolved in 5,000 parts of water by means of sodium hydroxide (four molecules of NaOH for every molecule of metaphen).

Metaphen is a yellow, odorless and tasteless substance; insoluble in water, almost insoluble in methyl alcohol, acetone, ether and aqueous sodium carbonate and sodium bicarbonate solution; very soluble in dilute aqueous sodium hydroxide solution and in ammonium hydroxide solution; sparingly soluble in nitric acid or boiling glacial acetic acid.

Suspend 0.1 Gm. of metaphen in 10 Cc. of glacial acetic acid, allow to stand for five minutes, decant and wash the residue three times by decantation with distilled water; repeat the procedure three times, then dissolve the residue in 15 Cc. of distilled water and 1 Cc. of 50 per cent. sodium hydroxide solution; add 0.5 Gm. of sodium hydrosulphite and heat to boiling; a heavy deposit of metallic mercury is obtained (*combined mercury*). Add 50 Cc. of benzene to 0.5 Gm. of metaphen, shake for two minutes, filter, and evaporate the filtrate to dryness: the residue does not weigh more than 0.005 Gm. (*absence of uncombined 3,4-nitro-2-cresol*). Dissolve 0.4 Gm. of metaphen in 3 Cc. of 15 per cent. sodium hydroxide solution and 30 Cc. of water; divide into two equal portions and transfer to two test tubes: to one add 0.1 Gm. of sodium hydrosulphite, allow to stand for one hour, filter and compare the filtrate with the other tube; the first tube is no darker than the control (*absence of dinitrocresol*). Treat 0.1 Gm. of metaphen with 20 Cc. of 1 per cent. sodium hydroxide solution: no insoluble residue remains (*absence of inorganic mercury salts or mercury derivative of nitroindazole*).

Transfer about 0.2 Gm. of metaphen, accurately weighed, to a dry erlenmeyer flask; add 2 Gm. of potassium permanganate, mix well, and then add 5 Cc. of diluted sulphuric acid; allow the solution to stand for 15 minutes; then carefully add 15 Cc. of sulphuric acid (concentrated) in 2 Cc. portions, and allow the mixture to stand for another 10 minutes. Decolorize the mixture drop by drop with hydrogen peroxide solution; after decolorization add 5 Cc. of water and boil for from five to eight minutes. Cool, add 150 Cc. of water and saturate the solution with hydrogen sulphide; keep the solution saturated for 18 hours. Transfer the precipitated mercuric sulphide to a Gooch crucible; wash with hydrogen sulphide water, then hydrogen sulphide water acidified with sulphuric acid; wash thoroughly with distilled water, then with alcohol and carbon disulphide. The carbon disulphide should remain over the precipitate for approximately one-half hour. Wash finally with acetone. Dry in an oven for one-half hour at 100 to 110 C. and weigh the mercuric sulphide. The amount of mercury calculated from the weight of the mercuric sulphide is not less than 58 per cent., nor more than 60 per cent. in the dried substance.

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SATURDAY, OCTOBER 11, 1924

THE PRODUCT OF MEDICAL EDUCATION

Discussions of educational policy and practices within recent times are surcharged with the spirit of criticism. A recent comment in THE JOURNAL[1] has elicited an interesting open discussion of the subject.[2] In education, as in politics, social ethics and other fields of human concern, it is often singularly difficult to establish the relation of cause and effect in connection with the items under debate. A spirit of candor and sanity regarding the problems of medical education seems to pervade a recent address delivered by Dean Edsall[3] of the Medical School of Harvard University before the Massachusetts Medical Society. Admitting the present unfortunate dearth of physicians in certain rural districts, he does not accept without proof the widely heralded statement that the increased standards of medical education and the extended duration of required study are to be charged with the lessened supply of such practitioners; nor does he take occasion to insist, as many are doing, that medical education leading to licensure is now too difficult for those who have ability but only small financial resources. Edsall asserts, on the contrary, that our standards represent not an extreme reached in a period of exaltation, but a tardy arrival at approximately the same standards that had already been reached by most other highly civilized countries, in nearly all of which financial conditions are much more difficult than here. It is not primarily insufficient numbers but rather unsatisfactory distribution that represents the problem to be solved—a condition that is not peculiar to the United States.[4] Dr. Edsall warns that reducing medical standards would not cure the faulty distribution of physicians, unless those who are briefly and badly trained went especially to the country regions, and there is no evidence that they have done this extensively, or would do it. On the other hand, it is obvious that this would be a highly unintelligent way of meeting the need for physicians in the country regions, and would be clearly recognized as such by intelligent people who employ them; probably it would be resented. As Edsall adds, the reasons that country practice does not attract physicians sufficiently are other than these, and must be met in other ways.

This does not mean—for the present discussion clearly reveals the contrary—that there is nothing wrong with current medical education. There is, without question, much that demands an early remedy. Some of the defects are part and parcel of the general system of education that has developed in the United States. "Standardization" in a wholesale way has contributed so largely to our material progress that it has become ingrafted in undesirable degree on our democratized schemes of education. Our requirements tend to become highly schematic and rigid. There is warrant for insisting that students should have greater freedom in the approach to their goal. As Edsall puts it, men should be accepted more in accordance with their knowledge and less in accordance with the process that they have gone through and the circumstances under which they have gone through it. They should also have more freedom as to precisely what the individual must know in detail rather than in principle when he enters medicine.

Is medical education justly open to the charge that it has become too scientific? If this refers to the seemingly endless accumulation of more or less isolated facts and to the multiplication of experiences in technic, the fear may be warranted. Edsall would assert that such recent graduates who have "a conglomerate of information and of technic relating to the sciences which they cannot use very effectually to illuminate their work, the rationale of which in relation to their life effort they do not really comprehend," are not trained too scientifically but too unscientifically. They have missed the essence of the search for truth and the powers that develop it. If, on the other hand, the assertion that medical teaching has become too scientific really means that the newer methods of study tend to drive the older graduate into irritating novelties that demand a change of habit and a renewal of intellectual effort, the charge may prove to be a boomerang. Few departments of human endeavor are in a static condition. Progress demands changes—changes in point of view, method and performance. It calls for energy, not inertia; readjustment, not retrogression. The person who hastens to master the intricacies of his automobile, radio or roentgen-ray equipment ought to be able to marshal the effort requisite to apply the microscope or even the cardiograph, if necessary, before he is confronted with the embarrassing absurdity of the mysterious "electronic" outfit of a quack. Mental inertia is neither practical nor scientific; it is deadening.

1. Current Criticisms of Medical Education, editorial, J. A. M. A. **83**: 273 (July 26) 1924.
2. "Current Criticisms of Medical Education," J. A. M. A. **83**: 439 (Aug. 9), 551 (Aug. 16), 632 (Aug. 23), 861 (Sept. 13), 941 (Sept. 20) 1924.
3. Edsall, D. L.: The Product of Medical Education, Boston M. & S. J. **191**: 283 (Aug. 14) 1924.
4. Supply of Physicians in Rural England, editorial, J. A. M. A. **80**: 1456 (May 19) 1923; Brit. M. J. **1**: 117 (April 21) 1923.

THE DISAGREEABLE SYMPTOMS OF CONSTIPATION

There is a common syndrome, familiar to the layman as well as to the physician, that goes with constipation and is promptly relieved by the evacuation of the bowel. The symptoms vary somewhat, ranging from indefinite "malaise," "biliousness" and anorexia, to outspoken headache and visibly coated tongue. The explanation of their origin has varied in successive generations. The designation "biliousness" is rapidly going out of style because the etiologic factors that it postulates philologically are no longer defensible. The implied hypothesis of too little or too much bile acting somehow, somewhere, has lost all scientific appeal. The progress in our knowledge of the chemistry of putrefaction has pointed to the possibility of the production of toxic compounds through the action of intestinal bacteria in food residues subjected to stasis in the bowel. The list of substances actually isolated, though usually in very small quantities, from putrescent or fermenting intestinal contents is quite formidable, including, as it does, such products as indol, phenols and pressor bases of known pharmacologic potency. These circumstances have helped to give a scientific dignity to the idea of "autointoxication" in connection with intestinal stasis; and of late, under attacks from various quarters, it has become fashionable to replace the earlier name by the expression "intestinal toxemia."

It would be rash and utterly unwarranted to assert that a toxemia of intestinal origin is either impossible or never realized. Alimentary intoxication must be looked on as a phenomenon of actual clinical significance, even if our knowledge of the actual toxins that may be involved is still extremely meager. But Alvarez [1] has lately argued that the symptoms most frequently associated with constipation can scarcely be due to poisons, in most instances. The relief from bowel movement is ordinarily very prompt. Under such circumstances, Alvarez argues, it is illogical to attribute the symptoms to a poison circulating in the blood, because in that event relief would not follow immediately after removal of the source of the toxic material, but later, when sufficient excretion had taken place to lower the concentration of the hypothetic substance in the blood. To use a homely simile, he adds, one does not sober a drunken man immediately by taking his flask of whisky away from him.

If the theory of intestinal toxemia is untenable, to what are the disagreeable symptoms attending intestinal stasis to be attributed? Alvarez feels confident that, in many instances at least, they are caused by mechanical irritation and distention of the rectum by the retained fecal masses. The rectum is exceedingly sensitive to pressure; and it is asserted that the classic symptoms of "autointoxication" can be produced in certain persons by packing the rectum with inert substances, such as cotton or fat. It has been pointed out that the usual subjects of "autointoxication" are persons of particularly sensitive temperament. No one believes that a mechanical hypothesis will suffice to explain all cases of the malaise of constipation, or that there is no such phenomenon as chemical toxemia. It is certain to be helpful, however, if our attention is directed away somewhat from a theory that has become a bogy to many persons. Particularly is this true at a time when they are surrounded with publicly advertised reminders which, as Alvarez states, tell of terrible results that will follow the failure "to buy so-and-so's laxative pills, patented syringes, paraffin oil, yeast, sour milk, agar, or bran."

1. Alvarez, W. C.: Intestinal Autointoxication, Physiol. Rev. 4: 352 (July) 1924.

THE PHOTO-ACTIVITY OF SUBSTANCES CURATIVE OF RICKETS—A REMARKABLE DISCOVERY

Rickets has been taken definitely out of the category of diseases due to bacterial invasion of the body and has become grouped with the increasing number of so-called deficiency disorders. The recent intensive experimental study of this disease has added much to the accurate delineation of the malady. To the classic clinical signs and physical symptoms, certain biochemical criteria of a striking and well defined character have now been added. In addition to conspicuous changes in the composition of the bones, disproportions occur in the concentration of calcium and phosphorus—the bone-forming inorganic elements—in the blood plasma. The chemical make-up of the latter is soon restored to a more normal character whenever effective antirachitic measures are instituted. Cod liver oil has this regulatory power in striking degree. It is an extraordinary circumstance, as was recently remarked,[1] that a substance containing neither calcium nor phosphorus, when administered to an animal whose blood is deficient in these elements, should have the power to cause the calcium or the phosphorus, as the case may be, to rise to, or nearly to, the level commonly regarded as normal and thereby to establish the normal equilibrium. Furthermore, cod liver oil not only acts as a regulator of the calcium and phosphorus metabolism but also permits the organism to operate with greatly increased economy.

In the presence of calcium or phosphorus starvation, cod liver oil enables the animal to get along as if the calcium or the phosphorus were supplied in sufficient or almost sufficient quantity in the diet. It is necessary to suppose that cod liver oil brings about maximal utilization of the minimal quantities of calcium or phosphorus in the diet. It greatly reduces waste of these elements and, therefore, must bring about maximal absorption from the alimentary tract.

1. Park, E. A.; Guy, Ruth A., and Powers, G. F.: A Proof of the Regulatory Influence of Cod Liver Oil on Calcium and Phosphorus Metabolism, Am. J. Dis. Child. 26: 103 (Aug.) 1923.

No less remarkable is the clearly demonstrated potency for this purpose of certain types of radiation, such as are present in direct sunlight and which emanate also from the quartz mercury vapor lamp. The similarity between the therapeutic or prophylactic action of cod liver oil and radiant energy extends to minute details. It matters not which of the seemingly unlike agents is employed, whether it be a physical entity derived from the sun and absorbed through the skin, or an oil entering the body through alimentary absorption; with either, favorable clinical and roentgenologic evidences of healing in rachitic subjects are demonstrable. With both, there is a similar latent period; with both, the normal equilibrium of calcium and inorganic phosphorus of the blood is reestablished; and furthermore, with both, the histologic changes in the skeleton are identical.

It was little short of prophetic, therefore, when Park, Guy and Powers [1] wrote, little more than a year ago, that the similarity between the action of cod liver oil and that of radiant energy in rickets is so close that a connection must exist between them. So far as the calcium and phosphorus metabolism of the body are concerned, cod liver oil seems to be a substitute for radiant energy. The expectation that a relation between cod liver oil and radiant energy will be established so as to make their analogous effects explicable on a single basis has been fulfilled in the department of pediatrics at Yale University. Kugelmass and McQuarrie [2] have demonstrated that the chemical substances curative of rickets—cod liver oil, egg yolk, bile, sperm oil and others have already been tested—when oxidized produce a definite blackening of sensitive photographic plates screened by quartz. Substances noncurative of rickets did not fog the plates, but an effect indicating radiant energy was secured with blood. These phenomena are undoubtedly due to the emission of ultraviolet radiation. The interposition of quartz plates excludes the effect of reducing vapors that otherwise blacken the sensitive plate. Oxidation seems to be an important factor in the production of the ultraviolet rays, for reduced substances were not reactive. When oxidized antirachitic substances are radiated with ultraviolet light, a reverse reaction seems to take place, resulting in a liberation of oxygen. Radiation appears to furnish the basis for the identical curative action of many substances and of sunlight in rickets. The discoverers of the important fact suggest that the new experiments may be applicable to physiologic phenomena in general. Not only do they suggest the mechanism common to all rickets-healing processes and imply a method to measure the therapeutic potency of the curative agents; they also disclose the fact that solar energy exerts a heretofore neglected function in the physiology of higher organisms as well as in plants.

2. Kugelmass, I. N., and McQuarrie, I.: The Photoactivity of Substances Curative of Rickets and the Photolysis of the Oxy-Products by Ultraviolet Radiation, Science **60**: 272 (Sept. 19) 1924.

THE FUNCTIONS OF THE GALLBLADDER

In medical practice, the gallbladder seems to be best known as an organ that is disordered in many persons. Physicians have become accustomed to place it in a category with the appendix, the spleen and other structures of ill defined function. There is at least a superficial justification for such an attitude, owing to the fact that all the organs referred to can be removed from the body surgically without untoward consequences. Appendectomy, splenectomy and cholecystectomy are common operations, undertaken on man with little jeopardy to life; hence it will readily be inferred that no indispensable physiologic activities are ordinarily carried out through the agency of the organs thus extirpated. Furthermore, as far as the gallbladder is concerned, its dispensability is attested by the fact that it is entirely missing throughout life in certain species of animals.

Nevertheless, the more recent careful studies of the physiology of biliary secretion have given unexpected indications of possible functional service on the part of the gallbladder. The bile is discharged into the bowel intermittently, whereas it is produced by the liver continuously. The theory that the gallbladder acts as a reservoir to permit a continuous secretion to be subject to intermittent discharge from the passages containing it has seemed highly plausible. Under ordinary circumstances, however, the interim storage capacity of the organ is too small to be of conspicuous service. According to W. J. Mayo,[1] the capacity of the gallbladder in relation to the amount of bile secreted is only about one to forty in man. It remained for the investigations of Rous and McMaster, to which reference has been made in earlier issues of The Journal,[2] to demonstrate the remarkable ability of the gallbladder to concentrate its contents by withdrawal of water. Through such concentration, the potential storage capacity becomes enormously greater.

At the Chicago session of the American Medical Association, Mann [3] of the Mayo Foundation advanced a new hypothesis concerning the function of the gallbladder, regarding it as part of a mechanism whereby the secretory activity of the liver is correlated with that of the gastro-intestinal tract. In the fasting state preceding a meal, Mann explains, the liver is active, but the amount of bile secreted is relatively small. The gallbladder is partially filled with concentrated bile, a most important component being the bile salts. The sphincter at the end of the common bile duct allows amounts of bile to escape into the duodenum only at infrequent intervals, and most of the bile secreted by the liver passes into the gallbladder. As soon as the

1. Mayo, W. J.: "Innocent" Gallstones a Myth, J. A. M. A. **66**: 1021 (April 8) 1911.
2. Functions of Gallbladder, editorial, J. A. M. A. **79**: 1246 (Oct. 7) 1922; More Facts About the Gallbladder, ibid. **79**: 1428 (Oct. 21) 1922; The Formation of Gallstones, ibid. **80**: 699 (March 10) 1923; The Reaction of the Bile and Gallstone Formation, ibid. **82**: 1127 (April 5) 1924.
3. Mann, F. C.: A Physiologic Consideration of the Gallbladder, J. A. M. A. **83**: 829 (Sept. 13) 1924.

ingested food passes the pylorus, the acid chyme causes the sphincter to relax, and coordinately with this the gallbladder expels a small amount of its contents. The bile salts are quickly absorbed from the intestine, and stimulate the liver to increased activity. With the increased secretion of the bile, there is an increase in the flow to and from the gallbladder. With the stomach empty, and chyme no longer passing over the papilla, the sphincter opens more infrequently, and gradually the secretory activity of the liver is reduced to that of the fasting state. Practically all the bile secreted by the liver in the fasting condition is stored in the gallbladder by concentration. It therefore appears to Mann that the function of the gallbladder is to stimulate the liver to increased activity at the time the gastrointestinal tract is most active.

The available evidence indicates that, after removal of the gallbladder, the discharge of bile into the duodenum is more or less continuous in all animals. In certain cases in man the rate, after a variable period of time, may become intermittent, while in others it always remains continuous.[4] Under such circumstances, the reputed advantage of correlation of the secretory activity of the liver with the activity of the gastrointestinal tract through the assumed discharge of the gallbladder would be lost.

4. Mann, F. C.: The Functions of the Gall Bladder, Physiol. Rev. 4: 251 (April) 1924.

Current Comment

THE REPRODUCTIVE POWER OF RATS

Rat reducing campaigns are not extraordinarily frequent, but when one learns the estimates that have been made as to the possibilities in rat reproduction, one marvels that such campaigns are not constant. A rat produces from six to twenty-two progeny at a birth, and may produce from three to twelve litters in a year. In 1909, Lantz estimated that rats breed three times a year and that the average litter is ten. At this rate, and without deaths, the increase from one pair would amount to 20,155,392 rats at the end of three years. This is the most conservative estimate that has been made. In 1917, Lantz modified his estimate so as to include six litters a year, with ten as the average sized litter. This results in eighteen times as many litters in three years, or 359,709,482 rats. Subsequent investigators accepted the figures of Lantz; and Rucker, carrying the figures to five years, obtained 940,369,969,152 rats. The most complete figures are those of Hinton, who began with a basis of six litters of eight rats in a year, and who figured that young rats breed when 4 months old. He concluded that only 50 per cent. of the rats could breed; that 95 per cent. will die during the first year; that 50 per cent. of the young die at birth, and that 50 per cent. of the remainder die before reaching breeding age. Nevertheless, the number resulting from the breeding of those remaining will yield billions on billions of rats within ten years. When these figures are considered, it becomes apparent that somewhere the calculations are at fault. It is known that there has been no exaggeration in the number of rats in a litter or in the number of litters in a year. It is therefore evident, as James Silver [1] points out, that the normal mortality of rats must be practically as great as their normal reproduction, and that increased reproduction is promptly opposed by increased destructive methods. Evidence exists that at various times there may be startling increases in the number of rats in some communities, so that the high reproductive power, when undisturbed, becomes an immediate menace. There would appear to be, particularly in view of the facts now known as to the relationship of the rat to the carrying of disease, sound reason for constant alertness in controlling the development of this species.

BENZYL BENZOATE AND ARTERIAL HYPERTENSION

Persons who are interested in the exploitation of new drugs have not infrequently alleged that the Council on Pharmacy and Chemistry of the American Medical Association shows unwarranted conservatism in accepting new products for inclusion in New and Nonofficial Remedies. While it is true that inertia characterized by adherence to tradition in therapeutics often acts as a bar to progress, long experience has shown that suddenly developed enthusiasms for new products or procedures applicable to medical practice are extremely liable to lack a sufficiently substantial justification in the form of demonstrable facts. While the Council on Pharmacy and Chemistry recognizes the existence of honest differences of opinion on many therapeutic questions and desires to be liberal in its attitude toward all seemingly worthy innovations, it refuses to admit claims that are neither in harmony with already accepted facts nor supported by acceptable evidence. The wisdom of this rigorous attitude has lately been demonstrated anew with respect to the widely acclaimed benzyl benzoate. The Council has insisted that its clinical use is still in the experimental stage,[2] despite the alluring announcements of the various alleged remedial virtues of the compound. Benzyl benzoate has, for example, been recommended and doubtless frequently prescribed for reduction of arterial hypertension. The careful clinical study of Gruber and Shackelford [3] at the Washington University School of Medicine, St. Louis, shows that benzyl benzoate taken in 25 to 30 drop doses (20 per cent. in alcoholic solution) has no immediate depressant effect on blood pressure. Furthermore, even continued therapeutic administration over a period of days produced no effect on the blood pressure in patients suffering with hypertension. The St. Louis investigators have arrived at the conclusion that benzyl benzoate taken by mouth has no action on the blood vessels and should not have a place in the physician's armamentarium in the treatment

1. Silver, James: The Reproductive Potential of Rats, J. Mammalogy 5: 66 (Feb.) 1924.
2. New and Nonofficial Remedies, 1924, p. 69.
3. Gruber, C. M., and Shackelford, H. H.: The Pharmacology of Benzyl Alcohol and Its Esters, III, Some Observations on the Effect of Benzyl Benzoate upon Arterial Hypertension in Man, J. Lab. & Clin. Med. 9: 685 (July) 1924.

of hypertension. In considering the seemingly favorable results reported by some others, it appears likely that the readings of blood pressure were complicated by psychic upsets or other interfering conditions in the patients tested. Only when adequate rest has been instituted and the patients adjusted to the disturbances incident to blood pressure measurements can satisfactory readings be secured. When these alone are evaluated, benzyl benzoate seems to be without effect on them.

TAKING THE LIGHT FROM UNDER THE BUSHEL

While every state has its penal and eleemosynary institutions, it is surprising how little the average citizen knows about the places that his taxes go to maintain. The need of disseminating information regarding such institutions has been recognized by Wisconsin, which, through its state medical journal, is publishing a series of messages to the medical profession on the Wisconsin State Sanatorium. That the public of that state needs information is evidenced from the fact that while it is estimated that there are about 17,000 tuberculous persons in Wisconsin, and the state sanatorium has beds for only 1,350, there are today, and always have been, a number of vacant beds. Such conditions undoubtedly obtain in other states. The state board of control is to be congratulated on bringing to the attention of Wisconsin physicians the facilities which the state offers to those afflicted with tuberculosis.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ARKANSAS

Personal.—Dr. Joseph L. Goodwin, who was in charge of the Trachoma Hospital, Russellville, has gone to Eveleth, Minn., to establish a trachoma hospital.——Dr. Harry H. Smiley has been appointed city physician of Texarkana to succeed Dr. George A. Hays, Jr., resigned.

CALIFORNIA

Personal.—Dr. Ralph H. Kuhns, San Francisco, has been appointed to the faculty of the University of California Medical School, department of pediatrics, and adjunct pediatrician to the Mount Zion Hospital, San Francisco.

Chiropractor Before the Board.—It is reported that Joseph A. Sanford, president of the Western College of Chiropractic, has been cited to appear at the October meeting of the state board of medical examiners to show cause why his license as a drugless practitioner should not be revoked (THE JOURNAL, September 20, p. 926).

Proposed Health District.—The board of supervisors of San Diego County has invited the incorporated towns of the county to join in organizing a health district, and the county league of municipalities has appointed a committee to consider the plan. Dr. Frederick T. Foard, U. S. Public Health Service, who is cooperating with the San Joaquin County health district, explained the plan of organization at the request of the mayor of San Diego. If the San Joaquin County plan is adopted and all the towns cooperate, there will be one central health department instead of nine as at present. It is reported that the San Joaquin County health district was the first one in the country.

COLORADO

Society News.—At the annual meeting, September 23, the Denver Sanatorium Association elected Dr. William N. Beggs, honorary president; Dr. Harry J. Corper, president; Major Earl H. Bruns, Medical Corps, U. S. Army, vice president; and Dr. Maurice Levy, secretary-treasurer (reelected).

The University School of Medicine.—The expansion of the University of Colorado School of Medicine, Denver, for which plans were made in 1918-1919, has been realized. The medical school and hospital group will be occupied this fall. A substantial contribution was secured for this project from the General Education Board in 1920, and the state legislature appropriated an equal amount in 1921. After a study of other medical schools and hospitals, plans were drawn in 1922. Then 17 acres of land at the edge of the closely built up portion of Denver were donated by Mr. F. G. Bonfils for a site, and the private subscription account was completed by a gift from the Carnegie Corporation. The funds having been obtained, construction began in the fall of 1922. The school is a unit now in that the four years of instruction are given at Denver. The medical school building will accommodate classes of fifty students, the state general hospital has a capacity of 150 beds, and the nurses' home will accommodate ninety. There is in addition a psychopathic hospital with about eighty beds. The general hospital will receive indigent patients from the entire state, and its staff will be composed of the faculty of the school of medicine. The buildings, designed on the unit plan to permit expansion, are in a simple Georgian style of architecture. The school of medicine and the school of nursing will be supported by a tax levy of 0.05 mill, yielding at present about $74,000 annually, which after October, 1924, will be supplemented for three years by an annual contribution of $50,000 from the General Education Board.

DELAWARE

State Medical Meeting.—At the one hundred and thirty-fifth annual session of the Medical Society of Delaware, Milford, October 15-16, the first day will be devoted to a combined meeting with the Dental Society of Delaware in the Caulk Dental Research Building. The second day's meeting will be held in Grangers' Hall.

DISTRICT OF COLUMBIA

Building Fund.—The Medical Society of the District of Columbia has an arrangement to accumulate a building fund whereby members who pay $12.50 are entitled to a chair in the auditorium which will be properly inscribed. Any one who cares thus to perpetuate his name or that of some noted medical friend should communicate with the secretary. The executive committee of the society has recommended that a plan submitted by the American Medical Association for the radio broadcasting of "Health Information," be submitted to the publicity committee. This plan of talks on health subjects is now being carried on in Pittsburgh, Chicago and other cities.

GEORGIA

Personal.—Dr. Thomas F. Abercrombie, Atlanta, who was delegate from the United States to a world conference on preventive medicine at The Hague, has just returned after an absence of two months at the conference.

Society News.—At the recent meeting of the Eighth District Medical Society, Washington, August 13, Dr. Addison W. Simpson, Washington, was elected president, Dr. Harold I. Reynolds, Athens, vice president, and Dr. Daniel M. Carter, Madison, secretary. The next meeting will be held in Athens the second Wednesday of August, 1925.——Physicians of Evans County who were members of the Tattnall-Evans County Medical Society have organized the Evans County Medical Society, electing Dr. Benjamin E. Miller, Claxton, president, and Dr. Daniel S. Clanton, Hagen, secretary-treasurer.

ILLINOIS

Society News.—Dr. John L. Porter, Chicago, will conduct an orthopedic clinic at Blessing Hospital, Quincy, October 13. A dinner will be given in his honor at noon and in the evening Dr. Porter will read a paper before the Adams County Medical Society at the Chamber of Commerce Building, on "The Differential Diagnosis of Spinal Diseases."

Smallpox.—According to the state department of health, there were fourteen times as many cases of smallpox reported last week in Illinois as there were in the corresponding week of last year. The disease is not only more prevalent, but

decidedly more fatal. Last year there was one death among each 200 cases, whereas, this year, there have been nearly three deaths among each 200 cases.

Chicago

Research Fellowship.—An anonymous donor has given funds for the maintenance of a research fellowship in preventive medicine at the University of Chicago for two years.

Chicago Tuberculosis Institute.—The superintendent of the Chicago Tuberculosis Institute states that the institute now maintains seventeen health centers and twenty-three public health nurses which are financed by the sale of Christmas seals.

Personal.—Dr. Arthur Dean Bevan, chairman of the Council on Medical Education and Hospitals, American Medical Association, gave an address at the laying of the cornerstones of the Todd Memorial Clinic and the Cancer Institute at the University of Minnesota, Minneapolis, October 1.——Hon. J. Hamilton Lewis will be the speaker of the evening at the annual dinner of the Chicago Medical Society in the Hotel LaSalle, October 15.——Dr. Edward H. Ochsner addressed the Carroll County Medical Society at Savanna, September 18, on "Chronic Fatigue Intoxication."

INDIANA

James Whitcomb Riley Hospital.—Dr. Samuel E. Smith, medical provost of Indiana University, has been appointed general superintendent in charge of the James Whitcomb Riley Hospital for Children, Indianapolis. The medical service at the hospital will be under the direction of the medical committee, comprising Dr. John H. Oliver, Dr. LaFayette Page and Dr. John F. Barnhill, all of Indianapolis. The medical committee will be empowered, it is reported, to call on the various departments of the Indiana University School of Medicine for such medical and surgical service as patients in the new hospital may require. This service will be given the hospital free of charge, but practice in the hospital will not be limited to the heads of departments of the school of medicine. John H. Finley, editor of the New York *Times*, will deliver the dedicatory address at the formal dedication of the hospital, October 9.

IOWA

New Law Creates State Department of Health.—The law governing the administration of matters of health, made at the special session of the legislature, became effective, October 28. The law creates a state department of health, to be administered by a commissioner appointed by the governor. There will be a state board of health also which will act in an advisory capacity and "consider and study the entire field of legislation and administration concerning public health, hygiene and sanitation." The various examining boards created by the law will be limited to three members, except the dentistry board, which will have five. A new requirement is that members of the state board of health must be health officers as well as physicians. The duties of the state health authorities remain about the same under the new statute. The changes are particularly concerned with administrative matters.

MAINE

Typhoid Carrier Causes Epidemic.—The city of Bath has isolated a young colored typhoid carrier who has been the cause of an epidemic. The first case was reported, June 24, the next June 27 and the next fourteen, June 30. When a check of the water, milk and food supplies on the last date showed that ten of these cases had taken milk from one dairy, representatives of the state department of health took specimens from all persons at the dairy. These people had lived on this farm for many years with the exception of a colored man, who came to work eleven days before the first case of typhoid was reported. His first stool examined was negative and from the next five examined, the bacillus typhosus was isolated from one. It was definitely established that forty-four of the forty-five cases reported in this epidemic had drunk milk from this farm. Four of them died. The colored man has been isolated. The city sanitarian of Bath would be grateful to receive suggestions as to how to make this man innocuous.

MARYLAND

Medical Society Postgraduate Course.—The Allegany-Garrett County Medical Society conducted a three day course of postgraduate instruction, September 18-21, at Cumberland, under the presidency of Dr. W. Oliver McLane. The lecturers were Dr. Charles R. Austrian, Johns Hopkins University Medical Department, whose subject was "The Lungs," and Dr. Maurice C. Pincoffs, professor of medicine at the University of Maryland School of Medicine and the College of Physicians and Surgeons, whose subject was "The Heart."

MASSACHUSETTS

Personal.—Dr. Frederick W. Derby, Boston, has been appointed ophthalmologist to the Boston department of health.

Ether Day.—The trustees of the Massachusetts General Hospital, Boston, have issued invitations to a celebration of the seventy-eighth anniversary of Ether Day, October 16, in the Moseley Memorial Building. Dr. Hans Zinnser, professor of bacteriology and immunology, Harvard Medical School, will give the address.

Chiropractor Convicted.—The case of Harry L. Woodward, chiropractor, convicted for the illegal practice of medicine, came up in the superior court, September 17. Justice Dillon placed Woodward on probation with the provision that he close his office in Northampton and leave Hampshire County, and warned him that he would receive the maximum jail sentence if he continued the offense.

Lectures at Harvard Medical School.—Dr. Thorvald Madsen, director of the Danish Serotherapeutic Institute, Copenhagen, will deliver the Cutter lecture on "Whooping Cough: Bacteriology, Diagnosis, Prevention and Treatment" at the Harvard Medical School, Building E, at 5 p. m., October 14.——Under the Edward K. Dunham Lectureship for the Promotion of the Medical Sciences, two lectures will be given by Willem Einthoven, professor of physiology, University of Leyden, October 21-22, at 5 o'clock, in Building C, of the Harvard Medical School, on "The Relation of the Mechanical and Electrical Phenomena of Muscular Contraction with Special Reference to Cardiac Muscle."

MICHIGAN

Infantile Paralysis Closes School.—The school of Sherman Township has been closed due to the development of infantile paralysis in a pupil from Nottawa. Pupils from this village were excluded from the school following the outbreak of this disease as they were from the schools of the city of Sturgis.

Society News.—Professor Frankl, Vienna, Austria, who is in this country on the invitation of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons, will have two classes in Detroit, commencing about October 15, there being ten lessons in endocrinology and twenty in clinical gynecologic pathology. Registration may be made with the secretary of the Wayne County Medical Society.——Dr. Allen Kanavel, Chicago, will address the Detroit Academy of Surgery at its first meeting, October 9, at the Detroit Golf Club.

Public Health Education.—On the initiative of the Michigan State Medical Society, a joint committee on public health education has been appointed to present to the public the facts of modern scientific medicine. The committee's work is based on the belief that cooperation between the state medical society and the University of Michigan will bring the best results, and it has been enlarged this year by the addition of representatives of the Michigan Tuberculosis Association, the Michigan State Nurses Association and the Michigan State Conference of Social Work. Representing the state medical society are Drs. William T. Dodge, Big Rapids; John B. Jackson, Kalamazoo, Frederick C. Warnshuis, Grand Rapids; Beverly D. Harison and Andrew P. Biddle, Detroit. The university is represented on the committee by Marion L. Burton, Ph.D., Drs. Hugh Cabot, G. Carl Huber, John Sundwall and Prof. William D. Henderson, Ph.D., the latter the secretary of the committee. Dr. Richard M. Olin represents the state department of health, Dean W. H. MacCracken, the Detroit College of Medicine and Surgery, and William W. Gibson, D.D.S., Grand Rapids, the Michigan State Dental Society.

MISSOURI

Eleven Chiropractors Arrested.—On instructions from the state board of health, eleven chiropractors of St. Joseph were arrested, September 23, on a charge of practicing medicine without a license. Each gave bond of $500.

Personal.—Dr. Charles E. Pierce, Republic, has been appointed assistant superintendent of State Hospital No. 4 at Farmington.——Dr. James R. McVay, Kansas City, has been appointed police surgeon to succeed Dr. Paul V. Woolley, resigned.

NEW JERSEY

Personal.—Dr. Edgar A. Ill, Newark, has been appointed by the mayor a member of the board of education.——Charles I. Lafferty, Atlantic City, has been appointed a member of the state board of health to succeed the late Oliver P. Kelly, Oak Tree.

Hospital News.—A contract has been let for the erection of a $1,000,000 hospital building for Englewood Hospital, Englewood.——The contract has been let for a $2,000,000 group of buildings for the Department of Institutions and Agencies of Morris Plains.

NEW YORK

Smallpox Epidemic in Amsterdam.—The state department of health announced, October 3, that a state of epidemic exists in the city of Amsterdam, where approximately seventy cases of smallpox have been reported recently. All children will be excluded from the city schools who do not submit to vaccination or show signs of having been effectively vaccinated within a fixed period.

Typhoid Outbreak in Hospital.—An outbreak of eight cases of typhoid fever has been reported from the Utica State Hospital. The cases are confined to one section having its own kitchen and dining room, and are about equally divided among the patients and the families of the staff. The food handlers are being examined to determine whether there is a carrier among them.

Consultation Clinics.—The state department of health held consultation clinics for diseases of the lungs at Newark, Lyons, Clyde and Sodus, the latter part of September. The patients were admitted on presentation of a card signed by the family physician or by the health officer. In addition to the physical examination, roentgenograms were taken of all suspected cases of tuberculosis. Such clinics have been held throughout the state at intervals for the last four years in an effort to detect tuberculosis in the early stage.

New York City

Academy of Medicine Opens Season.—The first stated meeting of the New York Academy of Medicine was held, October 2, the program of the evening being arranged in cooperation with the Section of Genito-Urinary Surgery with Dr. Hugh H. Young, Baltimore, as speaker. His subject was "Urogenital Tuberculosis, Interrelation with Tuberculosis Elsewhere, Treatment, Results, Prognosis."

Medical Society Moves Against Abrams' Clinic.—The Press Reference and Cooperative Committee of the Kings County Medical Society, through its chairman, Dr. Frank D. Jennings, has issued a statement relative to the opening of the Electronic Clinic in charge of Dr. Anna C. De La Motte, who is a member of the society. In his statement, Dr. Jennings calls attention to the fact that "Electrical engineers in various parts of the country have investigated the entire matter and have found no truth in the claims advanced by Abrams and his followers, while physicians who have studied under Abrams are reported to have sincerely tried to get results without success." No decision has been reached yet as to what action, if any, the Kings County Medical Society will take with reference to Dr. De La Motte.

Cooperation in Tuberculosis Work.—There is in New York a rare example of close cooperation in conducting dispensary work for the tuberculous between private institutions and municipal departments. The Association of Tuberculosis Clinics is a voluntary organization of municipal and private institutions which numbers at present thirty-one clinics, covering the entire city. Nineteen of these clinics are conducted by the department of health; five as part of the outpatient service of Lenox Hill Hospital, Mount Sinai Hospital, New York Hospital, Presbyterian Hospital and St. Luke's Hospital; four by the department of Bellevue and allied hospitals; two as part of a general dispensary service—New York Dispensary and Vanderbilt Clinic; and Red Hook as part of a health center service. The objects of the association are, among others, to promote dispensary control of tuberculosis, to eliminate duplication and overlapping of work and to prevent patients drifting from one clinic to another; to facilitate the attendance of patients at clinics by providing a clinic convenient to their homes, and defining the area within which each clinic operates; to cooperate with and assist the department of health in the supervision of tuberculosis. *Medical Week* is publishing a series of short articles on tuberculosis work in the city.

Medical Center Plans Announced.—The board of managers of the Presbyterian Hospital has announced its decision to erect a building jointly with the Columbia University College of Physicians and Surgeons, carrying out in the main the tentative plan announced three years ago. The structure that will be the nucleus of the center will cost $10,000,000. The section to be occupied by the College of Physicians and Surgeons will cost $3,000,000, which has already been subscribed. The Presbyterian Hospital section will cost $7,000,000, of which $2,500,000 is available, leaving $4,500,000 still to be raised. In a short time the Presbyterian Hospital will launch a campaign to raise this amount. The joint administrative board representing the hospital and the school is headed by William Barclay Parsons, with Dr. Clarence C. Burlingame as executive officer. It is planned to include in well coordinated form every type of special hospital and institution necessary for the treatment of any patient and the training of any specialist who has to do with the protection and promotion of health. The new building will also provide a place for scientists to collaborate in research work. The site of the new institution is the old American League Baseball Park at One Hundred and Sixty-Eighth Street. James Gamble Rogers is the architect. The hospital section of the building will be directly connected with the medical college. The private pavilion with 125 rooms will also be attached to this building, and the income from these rooms will be devoted to meeting the cost of free work in the wards. The new institution will surpass any medical center in Berlin, Vienna or any other European city.

NORTH CAROLINA

Physician Held to Grand Jury.—Dr. Thomas A. Smith, Charlotte, was recently arrested and held to the federal grand jury under $3,500 bond on a charge of violating the Harrison Narcotic Law, it is reported.

Personal.—Dr. Morgan P. Moorer, chief of surgical service at the U. S. Veterans' Bureau Hospital, Oteen, has been elected county health officer for Buncombe County to succeed Dr. Robert G. Wilson, resigned.——Dr. Charles L. Minor, Asheville, has been appointed chairman of a committee from the Civitan Club to consider the erection of a memorial to soldiers who fell in the World War.

NORTH DAKOTA

Hospital News.—The new $250,000 building of Trinity Hospital, Minot, was dedicated recently.

State Board Reappointments.—It is reported that Drs. William F. Sihler, Devils Lake; Victor J. La Rose, Bismarck, and Thomas L. De Puy, Jamestown, have been reappointed to the North Dakota State Board of Medical Examiners for a term of three years.

OHIO

New Medical Building.—At the opening of the autumn quarter, it is reported, the Ohio State University College of Medicine moved from its downtown location to the new building under construction on the campus on Neil Avenue.

Personal.—Dr. Austin S. McKitrick, Kenton, has been elected a member of the board of trustees of Ohio Northern University, at Ada.——Dr. Thomas G. Phillips, University of Toronto, has been appointed to the staff of the Massillon State Hospital, to succeed Dr. Roy R. Reynolds who resigned. ——Dr. Eugene H. Evans, Cleveland, has been commissioned a medical missionary by the Presbyterian Church and after a three months' course in tropical medicine at London will go to Venguria, India.——Dr. William H. Peters was reappointed health commissioner of Cincinnati, September 24.

Child Guidance Clinic.—A "behavior clinic," to be undertaken and financed for one year by the Commonwealth Fund of New York in cooperation with the community fund, will be established in Cleveland next year. Dr. L. G. Lowrey, Minneapolis, will direct the clinic. There will be two psychiatrists, two psychologists, five social workers and three students on the staff. Children may be brought for examination by parents or sent from the schools, the juvenile court and social agencies. When the clinic demonstrates its usefulness to the community, the Commonwealth Fund expects that it will be taken over and financed by the community fund, the board of education, or some other agency.

OKLAHOMA

Hospital News.—The Woman's Hospital will be changed to the Cole General Hospital, and plans are being made to increase its capacity to fifty beds.——The contract has been let for the erection of a municipal hospital building at Homing, for which a $35,000 bond issue was voted last fall.

OREGON

Naturopaths Seek Legal Recognition Through the Initiative.—Oregon voters, at the November election, are to approve or disapprove "naturopathy" as an independent sectarian method of treating disease and injury. Adherents to this sect could not induce the legislature to vest them with governmental authority to control the treatment of disease and injury by the methods peculiar to their cult. They have therefore carried the matter to the polls, under the initiative. The proposed law defines naturopathy as "the science and art of using such natural, vital and purifying therapeutic agencies as will enable the human body to cleanse itself of abnormal conditions and set up such inherent healing processes as will restore and maintain the highest possible degree of health," and "among other agencies" it names "food-science, hydrotherapy, electrotherapy, corrective movements, phototherapy, vibrotherapy, psychotherapy, mechanical and electrical appliances, hygiene, sanitation, natural living and life conservation." Three naturopaths who have practiced naturopathy in Oregon for one year each are to be appointed by the governor as a board of naturopathic examiners, and are to be licensed without examination. All other naturopaths, regardless of their education and experience, who have practiced in the state one year prior to the passage of the act, are to be examined by this board on nothing more than theory and practice of naturopathy, and if they pass are to be licensed. The coterie thus installed in power are, if the initiative measure be adopted, to protect themselves from competition by newcomers by the requirement—probably prohibitive if enforced in good faith—that no more naturopaths shall be licensed unless they possess high school educations or their equivalents and have been graduated as resident students by legally chartered schools of naturopathy wherein the courses comprise not less than 2,400 hours of study, covering at least three years of eight months each, and comprising the study of anatomy, physiology, histology, pathology, bacteriology, chemistry-toxicology, minor surgery, obstetrics-gynecology, diagnosis, hygiene-sanitation, herbs-antiseptics, psychotherapy, electrotherapy, hydrotherapy, manipulation, naturopathy theory and practice.

PENNSYLVANIA

Physicians Sentenced.—It is reported that Dr. Edward G. Rappold and Dr. James P. Kirk, both of Erie, are being held in the Erie County jail, awaiting transfer to the penitentiary at Atlanta, Ga., for violation of the Harrison Narcotic Law. Dr. Rappold has been sentenced to two years and Dr. Kirk to one year and a day.

A New Institute of Research.—Announcement has been made of the establishment of the Lehigh Institute of Research by Lehigh University. The purposes of the institute, as outlined by the board of trustees, are "to encourage scientific research and scholarly achievement in every division of learning represented in the university in recognition of the need for further and more exact knowledge in science and in the application of science to the affairs of modern life." The management of the institute is vested in a board of directors, composed of thirteen members of the staff of the university, including the president. The Lehigh Institute of Research will afford training to the following classes: members of the teaching staff of the university; members of the scientific staff of the institute, including research fellows, assistants and professors appointed by the university, and special investigators temporarily employed.

Philadelphia

Personal.—Dr. Henry A. Stone has gone to Peking, China, for eighteen months' service in the Rockefeller Foundation Hospital of that city.—Dr. Abraham Zingher, of the Research Laboratories, Department of Health, New York City, addressed the Philadelphia County Medical Society, September 24, on "The Dick Test in the Prevention and Control of Scarlet Fever."

Medical Emergency Corps.—More than 1,100 physicians, druggists and nurses have been enrolled in the medical emergency corps (THE JOURNAL, February 16, page 555). The city has been divided into seven districts, each with a supervisor, who has charge of emergencies arising in his district. The Philadelphia General Hospital has been selected as the place of mobilization, where members will report when calls for service are issued. The members have been classified, according to their various specialties, and arrangements have been made to purchase hospital supplies. The corps has received the cooperation of railroads to facilitate the transportation of its members when emergencies arise. Through the American Red Cross, a nursing corps has been made available, and a pharmaceutical corps has been created by a representative of the National Association of Retail Druggists. The members of the central governing board of the medical corps comprise, among others, Dr. Wilmer Krusen, honorary chairman; Dr. Charles A. E. Codman, president; Dr. G. Harlan Wells, vice president, and Dr. Louis Lehrfeld, secretary, and the presidents of the county medical societies.

SOUTH CAROLINA

Chiropractor Arrested.—L. H. Deadwyler, a chiropractor of Anderson, was recently arrested for practicing medicine without a license, it is reported, and released under $600 bail to appear at the November term of court.

TEXAS

Personal.—Dr. Aleck P. Harrison has resigned as chief of the bureau of rural sanitation, state health department, effective October 15. It is reported that Dr. Harrison is the second bureau chief and the fourteenth member of the health department forces who resigned during September in carrying out measures of economy, and that two bureaus have been merged and two abolished.—Dr. Frank J. Marecic, for four years city health officer of Faltonia, has resigned.

University News.—The following changes in the faculty of the University of Texas Department of Medicine, Galveston, it is reported, have recently been made: Drs. Bain Leake, Paul K. Comer and C. Pugsley to be instructors in anatomy; Dr. Abe Alexander to be instructor in pathology; Dr. James C. Pegues promoted to adjunct professor of physiology. Dr. George T. Lee has been added to the staff in obstetrics, Dr. Anna M. Bowie appointed full-time adjunct professor and Dr. R. J. Reitzel full-time instructor in clinical medicine and clinical pathology.

Municipal Water Supplies Classified.—It is reported that the state health officer has classified all municipal water supplies in the state into grades A, B and C. Cities whose water supply is reasonably safe for drinking purposes at all times have been graded A. These cities submit monthly reports to the state board of health with data on the daily operation of the water plants and the methods of laboratory control of the water. Cities whose water supplies do not fully meet requirements of the state board of health but which are making suggested improvements, are in grade B, and water supplies which have been found unfit for drinking purposes except when boiled or otherwise treated, are graded C.

VIRGINIA

Personal.—Dr. Nathaniel Thomas Ennett has been made medical director of the city schools of Richmond.—Dr. Ernest C. Levy, for thirty-eight years in the service of the health department of Richmond, retired from that service, September 30.

Memorial Clinic.—The Children's Memorial Clinic, Richmond, a memorial to the late Dr. McGuire Newton, has been placed under the leadership of Dr. Basil B. Jones as director. It is managed and maintained by a board of directors selected by the contributing and affiliating organizations. The work is entirely diagnostic, patients being referred with a diagnosis to family physicians or to the ward of a hospital.

WASHINGTON

Infantile Paralysis Closes Tacoma Schools.—The board of health of Tacoma, September 25, ordered all schools in the city, both public and private, with the exception of the College of Puget Sound and the City College, closed, it is reported, until the infantile paralysis situation in the city improves. Seven new cases were reported, September 24, making the total of known cases in the city forty-four.

WEST VIRGINIA

Personal.—George R. Bancroft, Ph.D., associate professor of physiological chemistry, has been promoted to the rank of professor and head of the department in the School of Medicine of West Virginia University, Morgantown.

Smallpox Delays Opening of Schools.—Dr. Lucian N. Yost, county health officer, postponed opening of the Norwood School for one week, beginning September 8, as a protective measure against a possible outbreak of smallpox on the east side.

Typhoid Epidemic.—A total of twenty-six cases of typhoid fever in the epidemic at Wheeling had been reported, September 26, and four deaths. The source of infection of seventeen of these cases was a well in Elm Grove from which many families obtained water. Five members of one family came down with typhoid fever.

PHILIPPINE ISLANDS

Typhoid Fever in Manila.—Various committees have been appointed in the last few years in the Philippine Islands for the study of typhoid fever and their recommendations have in the main been followed in Manila. The *Journal of the Philippine Islands Medical Association* says, however, that the typhoid situation appears to have shown no abatement. The disease has gradually become endemic, increasing the specific death rate from 29.47 in 1910, when Heiser studied its prevalence in the Philippines and formulated measures for its control, to 100.09 per thousand population in 1922. The death rate dropped in 1923 to 88.85 per thousand. Measures requiring the chlorination of green vegetables, the prohibition of the sale of shellfish, the pasteurization of carabou's milk, the supervision of drinking water and foods served in hotels and restaurants have been adopted. In 1923, there were 523,000 persons vaccinated against this disease so that about two-thirds of the population of Manila may be considered as having been inoculated with typhoid vaccine within the last two years. This journal states that "the 200,000 inoculated gave about 10 per cent. of cases while the 100,000 uninoculated furnished about 90 per cent." Typhoid vaccine would seem therefore to have decreased the incidence among these people many times. The recent appointment by the director of health of a new committee to investigate the typhoid situation gives further hope of improvement. The Bureau of Science and the U. S. Army Medical Research Board will cooperate with the committee with reference to the laboratory side of the investigation.

CANADA

Public Health News.—Infantile paralysis is prevalent in the vicinity of Hanover, Ont., and the township board of health held a special meeting recently to deal with the situation.——According to the minister of health in the Province of Ontario, the cost of insulin for diabetic patients as supplied free by the Ontario Department of Health has been cut in half in the last year, while the number of patients using it has about doubled. A year ago the cost per patient was $16.09; the present cost is $7.03. Two hundred and ninety-four thousand units are distributed each month.

GENERAL

Change in Editorial Office.—With the September issue, the editorial office of the *American Journal of Public Health* returns to New York from Detroit where it has been since January, 1923. For the time being the general secretary will edit this journal as a member of the editorial committee and Dr. Mazyck P. Ravenel and Henry F. Vaughan, D.P.H., will continue to serve as members of the committee.

Golden Rule Sunday.—Sunday, December 7, has been set aside, by the Near East Relief as Golden Rule Sunday to promote good fellowship and peace among nations and to provide food for 40,000 orphans under American care in the the Near East. People are asked on this day to eat a simple meal such as is served every day to children in orphanages in Syria, Palestine, Greece and the Russian Caucasus and to make an offering so that these children may continue to be protected until old enough to support themselves.

Army Nurse Corps Reserve.—There are 40,636 nurses enrolled in the American Red Cross. They constitute the reserve of the army nurse corps. These nurses may volunteer in other government departments and about 3,000 have done so. Nine hundred and sixteen are serving as public health nurses, 1,088 as instructors of home hygiene and care of the sick classes, 1,584 in the veterans' bureau nurse corps, and some are overseas with various organizations. The course in home hygiene and care of the sick aims to teach preventive measures, how to keep well, and simple nursing methods for the home, and during the year 52,706 students in private, public and parochial schools, summer schools, bible institutes and agricultural colleges were under instruction. In the last ten years 355,851 women and girls have received certificates after taking this course.

Legitimate Uses of Industrial Alcohol.—Replying to the committee on legislation at the National Wholesale Druggists Association Convention, Atlantic City, which charged that industries which depend on the use of alcohol had steadily declined on account of the drastic and unjust methods of the prohibition office, Prohibition Commissioner Haynes says that there is no evidence whatever to justify the charge. There has been an expansion in the volume of legitimate alcohol-using industries, he says, and a number of new alcohol-using industries established in the last four years. Many new formulae have been authorized by the prohibition office with the result that chemical industries have been established, supplying many products which heretofore were obtained only from Europe. The commissioner claims that regulations by which alcohol is obtained for industry have been kept as free from burdensome restrictions as could reasonably be done, and that the statement that "illegitimate users of alcohol apparently have but little trouble in obtaining all they need," is wholly incorrect. The prohibition unit is sometimes compelled to grant a permit which its own judgment does not approve, but the law must be changed before a remedy can be found to cure such defects of administration.

Health Education Among the Indians.—The Department of the Interior has introduced into the several hundred Indian schools throughout the United States, for the first time, a comprehensive program of health education. A special course of instruction in health, to be used by school teachers of the Indian schools, has been prepared in cooperation with the American Child Health Association. This course is based on the report of the joint committee on health problems in education of the National Education Association and the American Medical Association. The purpose of introducing health teaching into the Indian schools is to reach the entire Indian population with the hope that the Indian may take his place in the ranks of American citizens as a vigorous, healthy individual. The health education program will not be entirely confined to the schools. It will center, however, in the schools and the instructors will have the cooperation of employees from all the departments of the Indian service, including nurses, physicians, field matrons, reservation farmers and others engaged in work among the Indians. It is expected that this new program of health education based on the report of the joint committee on health problems will be much more thorough, practical and far-reaching than anything that has been attempted heretofore among the Indians.

Bequests and Donations.—The following bequests and donations have been announced recently:

The Georgia Baptist Orphans' Home, Atlanta, $25,000, by the will of Mrs. Andrew P. Stewart.

St. Joseph's Orphans' Home, the House of the Good Shepherd and St. John's Hospital, Helena, Mont., each $10,000, by the will of Mrs. Margaret Larson. St. Peter's Hospital, Helena, $5,000.

St. Anthony's Hospital, Rock Island, $25,000, by the will of Naomi L. Davenport, Rock Island.

Henry W. Putnam Memorial Hospital, Bennington, Vt., $15,000; the Servants for the Relief of Incurable Cancer, the New York Skin and Cancer Hospital, the New York Polyclinic Hospital and the Salvation Army, each $10,000, by the will of Mrs. Elizabeth T. Robinson.

St. Joseph's Hospital, Kansas City, Mo., $10,000, toward a nurses' home, and to St. Luke's Hospital, $5,000, for a bed for crippled children, by the will of Dr. J. D. Griffith.

Constantinople College, Turkey, $10,000; Robert College, Turkey, $10,000; American University of Beirut, Turkey, $10,000; Berea College, $10,000; Piedmont College, $10,000; president and fellows of Harvard, $15,000; Antioch College, Ohio, $10,000; by the will of J. J. Arakelyan.

Children's Hospital, Akron, $5,000, by the will of a recently deceased citizen of that city.

Chester County Hospital, Pennsylvania, $500, by the will of Brig. Gen. Edward E. Wood.

House of Rest for Consumptives and the New Rochelle Hospital, New York, will divide one fourth of the contingent estate of Stanley Dwight.

Louisiana Commission for the Blind, $2,000, by the will of Edward A. La Rose.

The Montefiore Hospital, $10,000; Mt. Sinai, $5,000; Presbyterian, Lenox Hill, Beth Israel, $1,000 each; Roosevelt and St. Luke's hospitals, all of New York, $500 each; by the will of the late Jacob Rossbach.

St. Vincent's Hospital, $1,000, by the will of the late James Devlin.

The will of the late Leopold Werstein, of Battle Creek, Mich., bequeaths $100,000, for the erection of a general hospital in that city. The Sisters of Mercy of Ann Arbor have assumed the task of raising additional funds.

St. Mary's Hospital and Blessing Hospital, Quincy, Ill., each $2,500, by the will of the late Hannah Heyman, New York.

LATIN AMERICA

Personal.—Dr. Joseph White is director general of the yellow fever extermination service organized in Brazil with the cooperation of the Rockefeller Foundation, International Health Board and the national public health service.——Dr. Vital Brazil has resumed charge of the Instituto de Butantan, S. Paulo, Brazil, and the *Brazil-Medico* says that the return of the prodigal son was celebrated with much rejoicing by high officials, senators, and the profession in general.——Dr. J. Godoy Gomes has been appointed director of the newly organized detention hospital, the Manicomio Judiciario, at

Rio de Janeiro. He has recently been studying similar institutions in other countries.——Dr. Abraham Campos C. has been elected president of the Sociedad Médica of Concepcion, Chile. The other officers are Drs. E. Rojas, vice president; N. Duran A., secretary, and E. Cardemil, treasurer. The committee in charge of the publication of the Crónica Médica, the organ of the society, includes the secretary and Drs. A. Santa Cruz, R. Oddou and W. G. Ottmar.

FOREIGN

Reprints Wanted.—Prof. B. A. Shatzillo, Odessa, Ukraine, chairman of the department of pathologic physiology who is engaged in the study of comparative physiology, nutrition and internal secretion, desires to obtain reprints of papers dealing with his general field of work. Reprints may be forwarded to Prof. B. A. Shatzillo, Laboratory of Pathological Physiology, Olgievaskaia 4, Odessa, Ukraine.

Hospital Opened in China.—The new buildings of the Union Hospital, Huchow, China, erected by the International Health Board, the Southern Methodist Mission and the American Baptist Foreign Missionary Society on lands, the gift chiefly of the local gentry, was formally dedicated, June 4. The plant includes the hospital proper, outpatient buildings, and power house, which were equipped with every modern convenience, at a cost of nearly $200,000. The main building is fireproof and has a capacity of 100 beds.

Personal.—Dr. Fritz Haber of Germany, noted for work on the fixation of nitrates from the air, is now in the United States to lecture at the Franklin Institute anniversary. Dr. Haber will also visit Japan to present a collection of German scientific books to replace those destroyed in the Imperial Library by the earthquake and fire.——Dr. Ellis H. Hudson, professor of medicine in the American University of Beirut, Syria, has resigned to go to Deiraz-Zore on the Euphrates River to do medical missionary work among the Bedouins.——Prof. R. Stanziale, of the chair of dermatology at Naples, has been made a chevalier of the Legion of Honor by the French government in tribute to his works presented at the International Congress on Leprosy at Strasbourg last year.——A marble tablet with a complimentary inscription and portrait in bas relief has been placed by the municipality of Villavieja, Spain, on the residence of Dr. D. García Alonso as an expression of gratitude for his long service as physician and citizen.——Dr. José Arce, rector of the University of Buenos Aires, heads the list of delegates from the universities of Argentina to the Spanish Medical Congress that convenes at Seville this month. Scientific societies and institutions have also sent delegates to a total of 273. Prof. S. Recasens is to preside at the congress. A special invitation was extended to all the Latin peoples.——Dr. H. Vincent, medical inspector general of the French army, has been elected honorary member of the Belgian Académie de médecine at Brussels.——The Italian Academy of Medicine at Rome has elected to honorary membership eight Paris professors, including Drs. Vincent, Roger, the dean of the medical faculty, Achard, Widal, Martin, Carnot and Legueu. Nine other French scientists were appointed corresponding members. In this group are Nicolle of Tunis and Borel of Strasbourg, Gley and Mesnil.——The special volume dedicated to Professor Forgue on his reaching the age limit with the University of Paris is to be presented in November with appropriate ceremonies. Over sixty have contributed to the volume.——Dr. Foveau de Courmelles, Paris, has been decorated by the government of Luxemburg. ——Dr. Oudendal, Kramat 95, Weltevreden, Java, is the secretary of the Jubilee Fund which offers financial assistance to workers in the line of research on communicable disease and prevention, preferably in the tropics. Only the income (25,000 florins) of the fund is available.

Deaths in Other Countries

The cable reports the death of Prof. **Auguste Broca**, of the chair of children's diseases in the medical faculty of Paris. Also the death of Dr. **J. Rotter**, chief surgeon at St. Hedwig's Hospital at Berlin, aged 68.

CORRECTION

Human Anthrax.—Based on a bulletin of the Bureau of Public Health of New Mexico, THE JOURNAL, September 20, published a news item under New Mexico on human anthrax in Eddy County. Dr. William F. Glasier, Carlsbad, N. M., writes that the disease diagnosed as anthrax in that locality has been proved to be tularemia and that there has been no anthrax there.

Government Services

Hospitals Authorized

Pursuant to the instructions of the Secretary of War, June 27, 1922, the organization of surgical hospital No. 11, organized reserves (St. John's Long Island City Hospital Unit, Long Island City, N. Y.), and No. 12 (St. John's Riverside Hospital Unit, Yonkers, New York), has been authorized.

Vacancies in Army Medical Corps

According to the latest tabulation at the office of the surgeon general, there are now forty-six vacancies in the medical corps of the U. S. Army. Letters have been addressed to members of the leading medical colleges requesting their assistance in interesting graduate students in an army career in order to fill these vacancies and to make up the full quota of medical officers.

Liberal Features of the Veterans' Act

Under the liberalizing of the World War Veterans' Act, which authorized the hospitalization of veterans who had been unable previously to establish that their disabilities were connected with service in the World War, the Veterans' Bureau admitted 2,822 patients in the period between June 7 and August 23.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Sept. 22, 1924.

Public Education in Health Matters

Sir George Newman, chief medical officer of the ministry of health, has issued an important memorandum on public education in health matters. He emphasizes the great importance of public opinion as a driving force behind sanitary and other hygienic measures. But it has not kept pace with the recent great advances of medicine. Compulsory education has indeed contributed to progress in the understanding and interpretation of the laws of health. More reasonable dress, the disappearance of tight clothing and trailing skirts, a far larger amount of outdoor exercise, more active amusements and athletics, and the open-air life, have brought an immense improvement in the personal health of girls and women, an improvement that has abolished chlorosis, previously a common disease, and has materially affected the whole standard of their health. Another example of the effect of public opinion is the rapid diminution of spitting of late years, and there is a rise in the standard of cleanliness, personal and domestic. But public opinion is still in need of education on the whole subject of the applications of preventive medicine that may be made by the individual. In every direction the prevention of disease is becoming a personal concern rather than a matter dependent on the authorities. It is neglect of this personal aspect that is now restricting the operations and results of preventive medicine in many fields; and it is this personal aspect that accentuates the need for a greater degree of public education. The need for an educational campaign is shown by a heavy mortality and invalidity from causes largely preventable. Neglect of the common cold and behavior which insures its direct transmission to others, are widespread. Sufferers from colds breathe, sneeze and cough in other people's faces, careless or ignorant of the fact that they are highly infectious. The habit of living, either at home or when at work, in overheated, ill ventilated rooms, and then going out into cold winds and weather, predisposes to respiratory disease and infection.

The second great cause of sickness is declared to be digestive disturbance, which is frequently due to errors of diet. Knowledge of food values and the needs of the body is lack-

ing, with the result that much money is spent on unsuitable food, while many valuable and cheap foods are neglected. Only by teaching what, when and how to cook and eat, and how to protect food from contamination, can we protect the function of the digestive system. Dental decay is the cause of much ill health, nearly all of it preventable. School medical and dental inspection has shown that more than half the school children at 8 years of age suffer from caries, and many of them from oral sepsis. In adolescents and adults this evil continues, producing many terminal conditions, gastro-intestinal trouble, toxemia, joint affections and neurasthenia. The habitual and thorough cleansing of the teeth the last thing every night, the use of foods which, themselves, help to keep teeth clean and periodic dental supervision are means of prevention. Every year the nation loses by death 3,000 mothers in childbirth; and tens of thousands of young mothers are unnecessarily damaged or invalided thereby. Much of this maternal mortality and sickness could be prevented, yet only a small proportion of mothers submit to antenatal supervision. In 1923, there died in England and Wales 52,582 infants, more than 32,000 of them in the first three months from diseases in large measure preventable. Since the establishment of schools for mothers, of maternity and infant welfare centers, and of other educational agencies for helping mothers in their maternal duty, the infant mortality rate has fallen by 50 per cent.

The Operative Treatment of Cancer of the Breast

The ministry of health has just published an important report on "Cancer of the Breast and Its Surgical Treatment," by Dr. Jane E. Lane-Claypon. The report is based on 20,000 cases in which operation was performed for cancer of the breast. The following conclusions are drawn: 1. After the older or incomplete operation, out of a net total of 7,029 patients, 2,956, or 29.2 per cent., were alive at the end of three years after operation. 2. After the modern or complete operation, out of a net total of 8,921 patients, 3,857, or 43.2 per cent., were alive at the end of three years after operation. 3. With the complete operation, the prognosis is intensively affected by the stage of the disease at which the patient is operated on. Thus: (*a*) If the disease is still local and no secondary growth has occurred, the percentage of survivors at three or more years after operation is from 65 to 80. (*b*) If secondary growths have already occurred, the percentage of survivors at three years after operation falls to 30 or less. (*c*) If the disease is very advanced, from 8 to 9 per cent. survive only as long as three years after operation. 4. The expectation of life after the onset of cancer of the breast, when the disease runs its own course, may be taken as being, on an average, not more than three and one-half years. 5. In the aggregate —i. e., without reference to the stage of the disease at operation—the effect of complete operation is to prolong life, increasing the expectation of life from the onset of the disease by from two to three years. 6. In patients operated on by the complete operation, while the disease is still local, the expectation of life from the onset of the disease may be, on the average, as much as ten years more than in the case of persons not operated on.

The Official Medical History of the War

The *Journal of the Royal Army Medical Corps* gives an interesting account of how the Official Medical History of the War was compiled. This is the first medical history of any of the combatants to be completed, and forms a mine of information on almost every conceivable military medical problem. As far back as the Crimean War, the writing of a medical history of British campaigns has been proposed by the director-general of the army medical service. In the Great War, the first move for a medical history was made by Prof. J. G. Adami of Toronto, then a colonel in the Canadian Army Medical Service. He wrote to Sir William Osler on the subject, and the latter forwarded his letter to Sir Alfred Keogh, director-general. He appointed Capt. F. S. Brereton to collect materials, and issued instructions for war diaries to be sent to him. Soon afterward, the organization of the Medical Research Committee was placed at the disposal of the army to assist in the preparation of statistics. Captain Brereton was authorized to go to France to visit the battle areas and collect sketches, plans and photographs, and direct the construction of models. The first consultative committee for the study of the subjects treated in the medical history of the war was appointed in November, 1914, but met only once. Not until December, 1918, was a successor to this committee appointed. This one consisted of high army medical officers, and included Sir William Osler. One of the members, Major-General W. G. Macpherson, was appointed editor-in-chief. Editorial subcommittees were appointed, each of which decided what aspects of subjects should be treated. The subjects into which the work was divided were: medicine, surgery, pathology, hygiene and statistics. The editorial committee allotted the volumes as follows: general history of the war, four volumes; diseases of the war and medical aspects of aviation and gas warfare, two volumes; surgery of the war, two volumes; hygiene of the war, two volumes; pathology and medical research during the war, one volume; medical statistics and epidemiology of the war, one volume. The work proved an enormous undertaking. In addition to 38,000 war diaries sent in by medical units on all fronts, there were received at the end of the war great numbers of reports, administrative files and miscellaneous papers. The war diaries were of very unequal historical value. The most useful were those which gave sketch maps, details of the position and work of the medical units, and changes in the organization and policy. The editor-in-chief compiled the whole of the first three volumes and part of the fourth. When selected writers were invited to contribute to the technical volumes, no definite rate of pay could be promised, and it was only after publication of the first volume that it was found that the grant allotted for the work allowed payment at the rate of $2.50 per page. The total cost of publishing was about $7,500 per volume, or $80,000 in all. The stages through which the volumes passed necessitated the reading and rereading by the contributors and subeditors of no less than five proof forms of each manuscript. After the manuscript had been read and corrected by the subject editors it was read by the editor-in-chief, to whom revised galley proofs were subsequently sent, and finally all page proofs were read by the editor-in-chief and the secretary.

A Lister Memorial at Glasgow

Sir Hector C. Cameron recently unveiled the Glasgow memorial to Lord Lister, which has been erected in Kelvingrove Park. It is a seated figure in bronze, the work of the sculptor George Henry Paulin. Sir Hector said that he was the sole survivor of those who served under Lister as house surgeons in Glasgow. Lister had wedded surgery and science in a manner unattempted before, with the effect that surgery, and especially operative surgery, had been so changed as to become a safe and soundly based science, instead of being, as it was formerly, a hazardous lottery. The result had been a saving of life beyond all calculation.

Pandemonium in an Irish Psychopathic Hospital

Though England has been troubled with strikes in recent years on a scale previously unknown, it has been reserved for Irish strikers to do unprecedented mischief. A strike of attendants took place at the Ballinasloe asylum, County Galway. Some departed, taking the keys with them. Others opened the cells of suicidal and homicidal lunatics and allowed them to escape. The result was that only the medical

superintendent, his wife and family, including a very young boy, and a woman physician were left with a depleted staff to carry on. When the superintendent tried to telephone for assistance, he found the wire cut.

Biology and Religion

A conference of modern churchmen has been held at Oxford, which had for its object the better understanding of the significance of science for religion. Papers of great interest were read by leaders in both the religious and the scientific worlds. Among them one by the physiologist Dr. J. S. Haldane, who has always been distinguished by his philosophical outlook on the fundamental problems of biology, should have a special appeal to physicians. Taking as his subject "Biology and Religion," he said that biology conflicted with certain details of theological dogma, but the real basis of religion lay within our own conscious experience. There was nothing to come between biologic science and real religion. Referring to the conception of a living organism as a mechanism such as Paley depicted, he said he had recently been engaged in editing the scientific writings of J. J. Waterston, one of the greatest physicists of the last century, whom his scientific contemporaries failed to understand. Waterston concluded that physical and chemical properties could not explain human and organic behavior. Dr. Haldane could not regard the mechanistic theory as tenable. The existence of biologic phenomena showed that a merely mechanical conception of physical reality was fundamentally inadequate. We could not dispense with the distinctive conception of life. The organism belonged to its environment just as much as its parts belonged to one another. We were not self-centered beings, complete in ourselves. We were children of a materializing age, and looked for a soul consisting of a thinly veiled limitation of matter and for a similarly constituted God. Such entities could never be found. God was in us, with us, and everywhere around, as Jesus taught. We must learn also that the voice of God was not a voice threatening us from outside with material punishments or coaxing us with hopes of material reward, but a voice, which when we heard it, transformed our most hidden motives and thoughts. If it was true that the reality of the universe was spiritual, it was no less true that we were constantly struggling with illusion and imperfection, and it was only in that struggle that spiritual reality manifested itself to us. Scientific investigation was just part of the struggle in which spiritual reality manifested itself, and the realization of this brought science, particularly pure science, very near to religion. It was only when science became dogmatic that it assumed an attitude that seemed to deny the existence of spiritual reality. The progress of science was just as much strewn with the remnants of discarded theories as was the progress of philosophy; but, in spite of this, continuity of development was evident in the histories of both these subjects. Surely it must be the same with theology. The churches could not afford to be hampered by unintelligible beliefs, which were mainly accretions. Religion itself stood on ground that could not be assailed, and had no use for rickety defenses. The story of Jesus and His teaching appealed to all men, and influenced them practically because it touched what was deepest and most real in them.

Establishment of a Health Service Bureau by an Insurance Company

A new departure in this country was made by the Wesleyan and General Assurance Society last year. The society inaugurated a new phase of activity; namely, a health service bureau. The object is to assist in the protection of the community against disease, and in the prolongation of life. The methods are preparation and distribution of literature on personal and civic hygiene, the rudiments of health and the prevention of disease. Pamphlets entitled "First Aid," "Influenza," "Measles," "Kill That Fly" and "Infantile Diarrhea," have so far been issued. Machinery has been set up for studying mortality and morbidity statistics. In the first instance, attention is being turned to deaths among the policyholders. Subsequently this statistical work will be extended in other directions—cooperation in health exhibitions, health weeks, and the preparation of health exhibits for ordinary exhibitions. The health service bureau has been accorded a gratifying reception, and brief experience has convinced the society that it is destined to play a most beneficent part in the battle of health and long life.

Against White Bread

Recent discussions in the lay press on the increase of cancer have again caused an attack to be made on the use of white bread, which is denounced as one of the causes of the increase because it is deprived of important components. Want of these in the food, it is held, lowers the resistance of the system to disease and also induces intestinal stasis, which, according to Arbuthnot Lane, is a great cause of cancer.

The whiter your bread,
The sooner you're dead.

With these lines, the *Daily Mail* begins an attack on the use of white bread which recalls its campaign of a few years ago. It also quotes Sir Harry Baldwin, surgeon dentist to the king, who says: "It is eminently desirable that the great stable article of diet should be of wholesome and nutritious quality. The fact is that the bread and flour supplied to our people has been deprived of all its vitamins and most of its proteins and valuable mineral salts. This is why we have so largely a 'C3' population."

The Prevention of Venereal Disease

At the fifth annual meeting of the Society for the Prevention of Venereal Disease, Sir Auckland Geddes (formerly ambassador to the United States) delivered his presidential address. Remarking that many in this generation were frightened by the subject of sex, he insisted that it was necessary to face the facts. The sexual appetities of youth could be controlled without mental and moral harm when there was understanding of their normality. The policy of hush was fatal. He agreed that to determine the period when childish innocence should cease was difficult. Any age line must be arbitrary, but he thought that 18 was a fair average for complete knowledge, in the case of males. Females should be dealt with much more individually, but information should be available to them on request at any time after 18. He recognized the dangers. There was some risk in encouraging in young, unbalanced minds the belief that all young persons should indulge in promiscuous sexual intercourse. But if normal young men had not met that idea by 18 they would certainly meet it at 19 or 20. The remedy was not to withhold knowledge, but by the proper influence of religion and training to build character. Much of the controversy on prevention that existed was based on a failure to recognize that there were two sides to this question—the human and the organismal. Ceaseless war must be waged on the causal organisms. The whole technic of practice of disinfection was an essential weapon in the struggle against venereal disease. On the motion of the president, the following resolution was adopted: "That this meeting respectfully request the minister of health to allocate to the Society for the Prevention of Venereal Disease an equitable proportion of any sum set aside for the education of the public regarding venereal disease and its prevention, and draws attention to the acknowledgement of the value of the educational work of the society by former ministers of health and by leaders of religious thought of all denominations."

PARIS

(From Our Regular Correspondent)

Sept. 12, 1924.

Tuberculosis and the Housing Problem

According to Dr. Boureille, head physician of the antituberculosis dispensary of the third arrondissement of Paris, this arrondissement has 85,000 inhabitants. It is one of the smallest arrondissements of Paris (116 hectares, or 286 acres) and is the most densely populated (739 inhabitants to the hectare, as compared with 365 inhabitants, the average for the other arrondissements). Here the highest incidence of tuberculosis occurs, and the total number of deaths annually from this cause ranges from 350 to 400. Yet all this quarter of the city is covered by the visiting public health workers from the antituberculosis dispensary that has been established in this section. The tenements are well kept, being thoroughly cleaned and the recommendations of the public health department carefully noted and scrupulously followed. But the streets are narrow; the houses have many stories, are poorly lighted, get very little sunshine, and the apartments are small. As a rule, the dwellers eat, sleep and work in the same room. It may be further noted that, in a general way, the arrondissements of Paris that have the highest mortality from tuberculosis (the eleventh, thirteenth, fourteenth, fifteenth, eighteenth, nineteenth and twentieth) are the districts in which the most complaints are heard with reference to insanitary dwellings.

However, while it is true that the attractions of the capital and the consequent exorbitant house rents bring about the crowding of families into wretched apartments, the fact must be recognized that Paris is not the only city with insanitary dwellings. As the result of an investigation into the conditions in the communes of the department of the Seine, it may be stated that from 200 to 600 persons out of a thousand are occupying either overcrowded or insanitary dwellings.

The influence of the housing problem on mortality from tuberculosis becomes evident on observing the effect of the reasonably priced hygienic dwellings constructed in recent years. At Lille, in the streets in which there were a considerable number of reasonably priced modern dwellings, the mortality from tuberculosis ranged in 1918 from 1.08 to 1.70 per thousand population, whereas, in the adjoining streets of the same workmen's quarter where there were no such modern dwellings, the mortality from tuberculosis was above 3.70 per thousand. Two large societies of Paris, which provide reasonably priced modern dwellings for 14,000 persons, have reported for their dwellings an average general mortality of 7 per thousand, whereas the mortality in other houses of the same quarter is around 20 per thousand. A society that essays to furnish hygienic dwellings for large families has an apartment house in a suburban commune in the environs of Paris, in which 402 persons reside. The mortality in this group, in 1922, was 4.76 per thousand, though the average for the commune is 27 per thousand.

Victims of Industrial Accidents Treated in Hospitals

In order to take account of the importance for the hospitals of the question of the victims of industrial accidents from the point of view of the annual budget, the hospitals of Nancy have ascertained the number of such victims admitted to their services during the course of a year. The total amounted to 470 men and ten women. The average length of their stay in the hospital was sixteen days, or a total of 7,680 days, which, at the usual schedule rate of 15 francs daily, amounts to 115,200 francs, to apply toward a hospital budget of nearly 7,000,000 francs.

During the years of the war and immediately following the war, although the cost of living had increased considerably, the schedule rate for victims of industrial accidents, as fixed by law, remained at 3.5 francs. It was later raised to 5 francs, although the regular schedule rate in many cities was above 10 francs. Owing to this fact, the insurance companies have, during recent years, profited from this low rate to the detriment of the poor. The inadequate compensation is felt all the more keenly by the hospitals, owing to the fact that only the more seriously injured, who require expensive dressings, are sent to the hospitals.

Again, the payment of fees to surgeons for changes of dressings or operations performed in the wards of the hospitals gives rise to many questions. The medical syndicates demand that the special schedule (the Breton schedule so called) established for treatment given victims of industrial accidents shall be applied in the hospitals as it is in private practice, and that the hospital administration shall receive no portion of the prescribed fees, the full amount going to the surgeons.

M. A. Krug, vice president of the administrative commission of the hospitals of Nancy, discusses this question in a recent article in the *Revue philanthropique*. He divides the physicians and surgeons of the hospitals into three classes: (1) clinical professors; (2) physicians to the hospitals, appointed on the basis of competitive examination and enjoying a certain prominence in the cities in which they are located; (3) the physicians of smaller communities, who occupy a less important position in the hospitals and hostels and whose situation from the hospital point of view is without great import. As for the professors, since their title and their reputation make it possible for them to secure most of the better paying operations performed outside of the hospital, they do not demand as their personal compensation the application of the Breton schedule in connection with operations that they perform in their hospital service. In fact, some of them have declared that, if the application of the Breton schedule should become obligatory, it was their intention to renounce all claims to any share in the fees and to use them entirely for the betterment of their services. One should not interpret M. Krug's statements as signifying that the professors, who, for purposes of instruction, are the guests of the hospital administrations, are tempted to transform their services, in which treatments have always been given gratuitously in the interest of instruction and the patients, into paying clinics from which they would derive financial profits. As for the second class of surgeons to the hospitals, which is recruited by means of competitive examination, M. Krug is of the opinion that they, as well, would be willing to allow the hospital administrations to retain a part of the fees paid for the care of victims of industrial accidents, for to them the question of fees is still a secondary matter. What they were most anxious to receive was the title of surgeon to the hospitals, which they always regard as an excellent reference. Finally, the third class of physicians or surgeons to the hospitals are located in small communities in which the services of a physician to the hospital are poorly paid and do not add much to his prestige, or affect, to any great extent, his fees outside the hospital. This is the particular class with regard to which the application of the Breton schedule to industrial accidents needs to be carefully studied. But objections are sure to be raised by the monopoly created in the hospital services in favor of the head physician, for it would never be possible to allow outside practitioners to give hospital treatment to the victims of industrial accidents. The best solution seems to be to admit the victims of industrial accidents to separate rooms or wards, in which they might receive treatment by the physician of their choice.

The question was discussed also at the recent congress of the Union hospitalière du Sud-Est, held at Toulouse. Professor Duguit, dean of the law faculty of the University of

Bordeaux, stated that it was very doubtful whether the hospitals were compelled to admit the victims of industrial accidents, since they constituted a risk that rested on industry. It is certainly an established fact that the hospitals are not bound to retain the victims of industrial accidents until they are completely restored to health; that is, until they have recovered the maximum capacity for work. It is, therefore, plainly the obligation of the insurance companies to adopt such measures as will protect their own interests, which might include the establishment at their own expense of special organizations that would care for industrial victims during the period of convalescence.

The Life and Times of Professor Bouchard

Dr. Paul Le Gendre, honorary physician to the hospitals of Paris, has just published a work entitled "Un médecin philosophe, Charles Bouchard, son ocuvre et son temps" (Masson et Cie., publishers). This is not a simple biography. The eminent rôle that Bouchard played in the field of medical instruction explains why the book contains so many sketches of great personalities — teachers, colleagues or pupils of Bouchard (Velpeau, Charcot, Magnan, Chauveau, Verneuil, Netter, Charrin, Roger, Widal). The work gives an account of many events in the scientific life of the period, in which Bouchard himself figured or of which he was a witness. Prof. H. Roger, dean of the Faculté de médecine of Paris, says of the book: "Would that young persons engaged in the medical profession might read and meditate on this book of Le Gendre. They would find it in many lessons and examples of conduct. They would have a better understanding of the grandeur and beauty of medicine. They would get a more noble conception of their professional duties. In our country we cover with glory and honor our artists and our literary writers; we record their slightest sayings and follow almost their every movement. Why do we not show the same interest in the men who work silently for the advancement of science? Is it not true that their lives serve us as examples more than any other?"

Death of Dr. André Bergé

Dr. André Bergé, physician to the hospitals of Paris, has died as the result of an accident, at Saint Servan, at the age of 61. Bergé was born at Mouy in 1863. He secured his preparatory training in the lyceum of Orleans and took his medical course at the University of Paris. He was a pupil of Charcot, Babinski and Hutinel, and obtained his doctor's degree in 1895. In 1902, he was appointed physician to the hospitals, whereupon he published an excellent "Guide de l'étudiant à l'hôpital." He wrote one volume of the Traité de médecine, by Enriquez, Bergé, Lafitte and Lami. He presented also numerous communications to the Société médicale des hôpitaux on uremia of the tetanic type, chronic localized tetany, the lenticular reddish spots in influenza, and other subjects.

An Exhibit of Mushrooms

The Société mycologique de France, under the chairmanship of Prof. Gabriel Bertrand, has organized an exhibit at the Pasteur Institute, which will include not only a display of mushrooms but will give also a clear idea of the regulations pertaining to the collection and sale of mushrooms and the measures adopted to prevent poisoning; likewise statistics on such accidents. This exhibit ought to prove particularly instructive, for poisoning from mushrooms is exceedingly frequent in France.

Advice to a Graduating Class in Medicine

Dr. Barthélemy, agrégé professor at the Faculté de médecine in Nancy, was recently selected to serve as chairman of the board of examiners at the Faculté française de médecine in Beirut and also to deliver the baccalaureate address to the graduating class in medicine. In his address, he urged the prospective practitioners to use their utmost endeavors to preserve simplicity of manner and speech. When interrogating patients, questions should be expressed in plain language, for they will be clearer and better understood, and the more ready replies will lead without difficulty to the diagnosis. The patient awaits with eager interest to learn what treatment will be prescribed. The temptation sometimes arises to prescribe an imposing array of new remedies, with which our therapeutic arsenal is overloaded at present. Some young practitioners are inclined to "supplement" (or rather to complicate) the treatment in their early cases by drawing largely on organotherapy.

In operative interventions, Barthélemy urged adherence to the same simplicity as in medical prescriptions. The display of modern surgical instruments is, indeed, of a nature to inspire awe and respect in every one. On every hand we hear that with this new forceps or that new needle-holder some of the most delicate operations can be performed with perfect ease, which is perhaps true in the hands of the inventor or the sponsor of the instrument. But the instrument may derive its sole value from the hand that guides it. Barthélemy expressed the hope that the new graduates would not swell the ranks of those who cannot undertake the slightest surgical operation without an imposing assortment of trays of instruments on the table before them. In the matter of assistants, too, at surgical interventions, there is an advantage in holding to the simpler customs. As for technic, how many new and complicated procedures, after an ephemeral popularity and an often unmerited vogue, have rapidly fallen into desuetude?

BERLIN

(From Our Regular Correspondent)

Sept. 6, 1924.

The Excess of Births Over Deaths in Germany, 1920-1923

According to the researches of Oberregierungsrat E. Roesle of Berlin, the birth and death rates of Germany since 1920 have shown such a tendency to decrease that both figures for the years 1921 to 1923 gave lower values, with the exception of the abnormal birth rate for the period 1916 to 1919, than have ever been previously recorded. This differentiation with regard to the figures may be noted: Since the temporary increase in the birth rate in 1920, it has fallen steadily, whereas the death rate has remained almost constantly at the minimum reached in 1921. The latter facts have resulted naturally in a progressive decrease in the excess of births over deaths.

After the cession of territory following the war, 1923 was the first year since 1914 that showed an actual increase in the population of Germany (by 326,000). This figure is, to be sure, about 107,000 less than the natural increase in population for 1923, which was 432,961, for the emigration to lands overseas, amounting to 115,416, must be taken account of. No adjustment, however, has been made for the emigration to European countries or the immigration from these and the ceded territories.

In spite of the fact that emigration to lands overseas has been in recent years more difficult than formerly, the number of oversea German emigrants since 1919 has constantly increased.

When one finds in any country that emigration is constantly increasing in spite of the fact that the excess of births over deaths is decreasing, it may be taken as direct evidence of temporary overpopulation or of economic distress among the people, in case the fall of the excess of births over deaths is caused solely or mainly by the decrease of the birth rate. The demographic statistics of Germany, which extend back to 1841, reveal only three such periods in which a

falling excess of births over deaths due to a sudden decrease in the birth rate was accompanied by a concomitant increase in emigration. These were the periods marked by political or economic crises: 1846-1848, 1852-1855 and 1881-1885. The first period (1846-1848) was the direct consequence of the bad crop failure of 1846, the resulting high food prices and the general financial crisis of 1847. The second period (1852-1855) was due to a succession of crop failures and to the appearance of the potato disease in the years from 1852 to 1855 and the resulting persisting food scarcity. The third period was characterized by the great industrial and financial crisis that followed the era of overdevelopment which succeeded the victory over the French.

Although their causes were various, these three critical periods were alike in that the depression extended over several years. Just as the derangement of the economic life of a whole nation, beginning at first in one region, requires considerable time before it affects the whole country, so the period of reconstruction must of necessity extend over several years. The usual drama has been staged since the last war as well, and the first act—financial depression due to the inflation of the current medium of exchange—has now passed across the boards. The population of the cities, which was at first chiefly affected by the economic ebb, sought safety or relief in a hitherto unexampled limitation of births—and not only the burgher but also, and possibly to an even greater extent, the manual laborer—in order that the pinch of the limited supply of food might be less keenly felt and the crowded condition of apartments be not made worse. The rural population, on the other hand, was at first little affected by the crisis, and until 1921 the birth rate continued normal. Consequently, a hitherto unknown differentiation arose between the birth rate of the large cities and that of the rural districts, and in 1922 and 1923 became even more pronounced, notwithstanding the fact that the birth rate for the provinces also began to drop, for the birth rate of the cities fell, at the same time, even more rapidly than before. However, owing to the fact that the difference between the death rate of the cities and that of the rural sections became less and less, the increasing difference between the two birth rates found its expression also in the excess of births over deaths in the cities and the rural regions.

Whereas in 1913 the excess of births over deaths was 10.6 in the cities and 13.6 in the rural districts (with a difference of 3.0), in 1920 the difference had risen to 4.9 and in 1923 to 6.0; the excess of the cities was scarcely more than one third of the excess for the provinces. In 1921 the excess of births over deaths reached its maximum since the war, it being 8.1 for the cities and 13.6 for the rural sections, or the same excess noted in the country districts in 1913. From this maximum the excess for the cities dropped in 1923 to 3.5, a decrease of 4.6, and the excess for rural regions fell to 9.5, a drop of only 4.1, or, expressed in percentage, the excess for the cities decreased 57 per cent. and that for the provinces 30 per cent. The relative decrease of the excess of births over deaths was accordingly almost twice as great in the cities as in the rural districts.

This differentiation in the decrease of the excess of births over deaths for the cities and the rural districts indicates that the conditions in the country as a whole are by no means as unfavorable as was at first supposed when the statistics for the cities, which appeared first, were alone available; for the excess of births over deaths for the rural regions in 1923 (9.5) must be regarded as high in comparison with former years and as measured against the excess of births over deaths reported from other European countries, which ranged in 1923 between 2.4 (France) and 16.1 (Netherlands). There seems, therefore, to be no good reason to become despondent over the regenerative power of the German people.

Marriages

FRANK CUNNINGHAM WILSON, Birmingham, Ala., to Miss Emily Bland Symington of Baltimore, September 16, at Catonville, Md.

MYNIE GUSTAVE PETERMAN, Rochester, Minn., to Miss Mildred Mackenzie of Muscatine, Iowa, September 29.

GEORGE EVANS TWEEDIE, Sandusky, Mich., to Miss Margaret Elizabeth Smith of Mullins, S. C., September 10.

HENRY AUGUSTUS KLING, Hamtramck, Mich., to Miss Alice Mary Richardson of Southold, N. Y., August 23.

DOUGLAS D. MARTIN, Tampa, Fla., to Miss Mary Louisa Chancellor of St. Petersburg, September 17.

LAWRENCE MERRILL FETNER to Miss Marjorie Wearn, both of Charlotte, N. C., September 16.

GEORGE THOMAS BRITTON to Miss Emma Leoti Combs, both of Kalamazoo, Mich., August 30.

HYMAN I. GOLDSTEIN to Miss Dorothy Wessel, both of Camden, N. J., September 24.

CLARENCE E. HUSTON, Paulding, Ohio, to Miss Martha E. Cellar of Marion, August 21.

CLAUDE CROSSLAND WOOD, Medora, Ill., to Miss Inez Fern Carr of Chicago, August 27.

Deaths

David Combs English ✠ New Brunswick, N. J.; Medical Department of Columbia College, New York, 1868; president of the Medical Society of New Jersey, 1897-1898, and editor of its journal since 1905; past president and for many years treasurer of the Middlesex County Medical Society; delegate to the Pan-American Medical Congress; on the staff of the Wells Memorial Hospital, now the Middlesex General Hospital; aged 82; died, September 18, of injuries received while on a trip in Maine.

Arthur Ward Cutler ✠ Oneonta, N. Y.; Columbia University College of Physicians and Surgeons, New York, 1896; served in the M. C., U. S. Army, during the World War; on the staff of the Aurelia Osborne Fox Memorial Hospital; aged 54; died, September 25, at the Clifton Springs (N. Y.) Sanatorium.

Rudolph Jacob Gieseler, Racine, Wis.; Rush Medical College, Chicago, 1917; served in the M. C., U. S. Army, in France, during the World War; aged 32; died, September 19, at the Northwestern Branch National Home for Disabled Soldiers, National Home, following a long illness.

John Young Shamel ✠ Gibson City, Ill.; University of Pennsylvania School of Medicine, Philadelphia, 1894; formerly president of the board of education; aged 53; died, September 30, as the result of a fall from the third floor of the Illinois Central Hospital, Chicago.

John Fleetwood Reed, Wichita Falls, Texas; Vanderbilt University Medical Department, Nashville, Tenn., 1887; formerly a druggist; for more than twelve years member of the city council and city commissioner; aged 68; died, September 6, of cerebral hemorrhage.

George William Partridge ✠ New York; Columbia University College of Physicians and Surgeons, New York, 1907; on the staff of the New York Polyclinic Medical School and Hospital; aged 49; died, September 15, of coal gas asphyxiation due to a defective chimney.

William Francis McManus, San Antonio, Texas; Rush Medical College, Chicago, 1902; member of the State Medical Association of Texas; served in the M. C., U. S. Army, in France, during the World War; aged 58; died suddenly, September 15, of heart disease.

Sherman F. Ashby, Fairmont, Neb.; Hahnemann Medical College and Hospital, Chicago, 1885; formerly member of the state board of medical examiners, member of the board of education, city physician and mayor of Fairmont; aged 58; died, September 16.

Frank Edward Whipple, Manchester Center, Vt.; Bellevue Hospital Medical College, New York, 1881; member of the Vermont State Medical Society; aged 67; died, September 18, of a self-inflicted bullet wound, while suffering from ill health.

Orville Winthrop McMichael ✠ Chicago; Hahnemann Medical College and Hospital, Chicago, 1890; a member of the staff of the Columbus Hospital, where he died, October 2, aged 57, following amputation of his leg for tuberculosis of the bone.

Esdaile Philip Cohen, New York; University of Pennsylvania School of Medicine, Philadelphia, 1879; aged 69; for many years medical writer on New York newspapers; died, September 18, at the Broad Street Hospital, of pneumonia.

Woodson H. Taulbee ✠ Maysville, Ky.; Louisville Medical College, 1904; member of the Kentucky State Medical Association; on the staff of the Hayswood Hospital; aged 43; died, September 19, of carcinoma of the cecum and liver.

William Archibold Bradsher ✠ Roxboro, N. C.; University of Maryland School of Medicine, Baltimore, 1904; for many years county quarantine officer and county and city health officer; aged 47; died, September 17, of myocarditis.

Teunis Ardenne Boot ✠ Holland, Mich.; University of Michigan Medical School, Ann Arbor, 1886; formerly city health officer; aged 63; died suddenly, September 19, at a hospital in Kalamazoo, of cerebral hemorrhage.

Wallace Harold Barnes ✠ San Francisco; Jefferson Medical College of Philadelphia, 1918; clinical instructor of medicine at the Stanford University (Calif.) School of Medicine, aged 30; died, September 14, of heart disease.

Flavius Josephus Knight, Charlotte, Mich.; University of Michigan Medical School, Ann Arbor, 1895; aged 56; was instantly killed, September 20, when the automobile in which he was driving was struck by a train.

Roscoe Davidson Jackson, Casa, Ark.; Tulane University of Louisiana Schol of Medicine, New Orleans, 1921; member of the Arkansas Medical Society; aged 30; died, September 12, at a hospital in Little Rock.

Martin Regensburger, San Francisco; University of Munich, Germany, 1875; formerly president of the state board of health; aged 70; died, September 12, of chronic myocarditis and arteriosclerosis.

Daniel J. Rush, Philadelphia, Miss.; College of Physicians and Surgeons, Baltimore, 1888; member of the Mississippi State Medical Association; aged 64; died, August 9, of ulcer of the stomach.

Arthur Elmer Kramer ✠ Chicago; St. Louis (Mo.) University School of Medicine, 1921; aged 31; died, September 17, at St. Luke's Hospital, following an operation for a tumor of the brain.

William Henry Fields, Cairo, Ill.; Howard University School of Medicine, Washington, D. C., 1890; member of the Illinois State Medical Society; aged 58; died, September 29, of uremia.

Howard S. Kinne ✠ Chester, Pa.; Medico-Chirurgical College of Philadelphia, 1893; formerly instructor of pediatrics at his alma mater; aged 60; died, September 25, of angina pectoris.

Stephen L. Mayo ✠ Bishop, Texas; Memphis (Tenn.) Hospital Medical College, 1902; member of the state board of medical examiners; aged 49; died, September 19, at Brownwood.

Cyriaque J. Gremillion ✠ Alexandria, La.; Medical Department of the Tulane University of Louisiana, New Orleans, 1897; aged 52; died, September 12, following a long illness.

Henry Steele, New York; Cornell University Medical College, New York, 1922; intern at the Bellevue Hospital, where he died suddenly, September 26, of heart disease, aged 25.

Joseph Morrill Putnam, Winchester, Mass.; Bellevue Hospital Medical College, New York, 1870; member of the Massachusetts Medical Society; aged 76; died, September 19.

Joseph R. Baker, Pittsburg, Ill. (licensed, Illinois, 1878); formerly mayor of Pittsburg and for many years county coroner; aged 74; died, September 15, at Marion.

Frederick S. Boston, Seattle; Meharry Medical College, Nashville, Tenn., 1915; aged 32; on the staff of the City Hospital, where he died, September 21, of pneumonia.

John Valetine Koch, Dayton, Ohio; Barnes Medical College, St. Louis, 1904; member of the Ohio State Medical Association; died, August 16, of angina pectoris.

Frederick Hiller, Jr., Los Angeles; Hahnemann Medical College of Philadelphia, 1873; aged 76; died, September 5, of acute dilatation of the heart and hypertension.

Edward Kidd, Trenton, Ont., Canada; Queen's University Faculty of Medicine, Kingston, 1871; aged 75; died, August 25, of chronic myocarditis and arteriosclerosis.

Charles R. J. Kellam, Heron Lake, Minn.; Dartmouth Medical School, Hanover, N. H., 1869; formerly a druggist; Civil War veteran; aged 87; died, September 17.

Mary Edington Phelps, Newburg, Ind.; Northwestern University Woman's Medical School, Chicago, 1893; aged 61; died, September 21, following a long illness.

Joseph Jette, Woonsocket, R. I.; University of Montreal Medical Faculty, Montreal, Que., Canada, 1885; aged 64; died, September 4, of cerebral hemorrhage.

Alfred D. Carson, Philadelphia; University of Pennsylvania School of Medicine, Philadelphia, 1886; aged 57; died, September 20, following a long illness.

Jugertha S. Wainwright ✠ Giltner, Neb.; University of Nebraska College of Medicine, Omaha, 1901; aged 45; died, September 10, of cerebral hemorrhage.

Charles S. Bliss ✠ Coggon, Iowa; University of Vermont College of Medicine, Burlington, 1885; aged 61; died suddenly, September 23, at Evanston, Ill.

Thomas M. Anderson, Pickens, Miss.; University of Nashville (Tenn.) Medical Department, 1873; Confederate veteran; aged 80; died, September 6.

William Lucius Armstrong, Hartford, Conn.; Medical Department of Columbia College, New York, 1893; aged 57; died, September 12, of tuberculosis.

Vincent Gomez, Havana, Cuba; Long Island College Hospital, Brooklyn, 1892; Spanish-American War veteran; died, July 28, following a long illness.

Francis Michael Aloysius O'Sullivan, Lowell, Mass.; College of Physicians and Surgeons, Baltimore, 1905; aged 42; died recently, of tuberculosis.

Gustav A. Shane, Waynesburg, Ohio; Western Reserve University School of Medicine, Cleveland, 1867; aged 83; died suddenly, September 14.

Samuel R. Carlton, Krum, Texas; Vanderbilt University Medical Department, Nashville, Tenn., 1888; aged 63; died, August 8, of heart disease.

William Donnelly, Ryan, Iowa; Bellevue Hospital Medical College, New York, 1883; aged 67; died, September 9, of carcinoma of the stomach.

James A. North, Franklin, Tenn.; University of Nashville Medical Department, 1861; aged 84; died recently, as the result of a fractured hip.

Leonidas B. Sowell ✠ Forney, Texas; University of Louisville (Ky.) School of Medicine, 1893; aged 52; died suddenly, September 14.

John Clarence Murphy, Brussels, Wis.; Northwestern University Medical School, Chicago, 1911; aged 44; died, August 23, at Milwaukee.

Arthur J. Vial, Portland, Ore.; Willamette University Medical Department, Salem, 1894; aged 53; died, September 2, at Los Angeles.

William Shakespeare Reece, Akron, Ohio; Louisville (Ky.) Medical College, 1886; aged 70; died, September 10, of exhaustion.

Robert Emmett Moore, Wytheville, Va.; Medical College of Virginia, Richmond, 1861; aged 85; died, September 11, at Richmond.

Theodore Everett Hardy ✠ Waterville, Me.; Medical School of Harvard University, Boston, 1898; aged 52; died, September 10.

Luther Carroll Corbin, Passaic, N. J.; Baltimore (Md.) Medical College, 1894; aged 63; died, September 14, at Lynchburg, Va.

Frederick Fletcher, Bradford, Vt.; Dartmouth Medical School, Hanover, N. H., 1871; aged 81; died recently, of senility.

J. A. White, Greenville, S. C.; Atlanta (Ga.) Medical College, 1885; aged 63; died, September 12, following a long illness.

Mark Monroe Evans, St. Louis; Rush Medical College, Chicago, 1899; aged 52; died, September 19, of pernicious anemia.

Charles Truman Spencer, Webberville, Mich.; Detroit College of Medicine and Surgery, 1913; aged 36; died, September 9.

Garrett Davis Judy, Lexington, Ky.; University of Louisville School of Medicine, 1879; aged 68; died, September 15.

Wilson Buckby, Doylestown, Pa.; Jefferson Medical College of Philadelphia, 1870; aged 80; died, September 3.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER GENERAL MATERIAL OF AN INFORMATIVE NATURE

SOME "MIXED" VACCINES OF G. H. SHERMAN NOT ACCEPTED FOR N. N. R.

Report of the Council on Pharmacy and Chemistry

The Council has authorized publication of the following report indicating the nonacceptance of a number of "mixed" vaccines of the firm of G. H. Sherman.

W. A. PUCKNER, Secretary.

G. H. Sherman, Detroit, requested acceptance of the following "mixed" vaccines for New and Nonofficial Remedies:

Erysipelas Vaccine No. 1, containing killed Streptococcus and Staphylococcus albus.

Pneumo. Mixed Vaccine No. 6, containing killed Streptococcus, Pneumococcus, Staphylococcus aureus and Staphylococcus albus.

Strepto. Staph. Vaccine No. 10, containing killed Streptococcus, Staphylococcus aureus and Staphylococcus albus.

Colon Bacillus Combined Vaccine (Modified Van Cott) No. 35, containing killed Colon bacillus, Streptococcus, Pneumococcus, Staphylococcus aureus and Staphylococcus albus.

Friedlander Vaccine No. 36, containing killed Friedlander bacillus, Micrococcus catarrhalis, Pneumococcus, Streptococcus, Staphylococcus aureus and Staphylococcus albus.

Influenza Vaccine No. 38, containing killed Influenza bacillus, Pneumococcus, Streptococcus, Micrococcus catarrhalis, Staphylococcus aureus and Staphylococcus albus.

Catarrhal Vaccine No. 40, containing killed Micrococcus catarrhalis, Streptococcus, Pneumococcus, Staphylococcus aureus and Staphylococcus albus.

Whooping Cough Mixed Vaccine No. 43, containing Bordet's bacillus, Micrococcus catarrhalis, Pneumococcus and Streptococcus.

As evidence for the value of these "mixed" vaccines, the firm of G. H. Sherman submitted a printed brochure: "Data on the Use of Mixed Bacterial Vaccines," which comprised 112 printed pages. Part of the data submitted consisted chiefly of the reproduction of letters from physicians—some of them men of high standing—testifying to the value of "mixed" vaccines in various diseases. The other part of the data consisted of abstracts or reprints of articles which have appeared in medical publications. Some of this was in the shape of controlled case series.

An example of the material submitted as evidence is found in a reference to a report by Dr. W. O. Sherman, Pittsburgh, who is quoted (Society Proceedings, Jour. A. M. A., Dec. 21, 1918, p. 2098) as having reported extraordinarily favorable results in prophylactic vaccination against influenza. An examination of the reference reveals that Dr. Sherman presented his data in a general discussion of influenza before the American Public Health Association. It was not presented in a form which permits of critical analysis, and on the basis of the figures one would not be in a position to draw any conclusions as to the value or lack of value of the vaccines. Furthermore, if the person who prepared the reference to Dr. Sherman's work had read the next page of THE JOURNAL in which the proceedings were reported, he would have found in the same discussion, the following statement from Dr. Victor C. Vaughan: "I do not hesitate to say that it [the vaccine] has not done one bit of good."

A number of the quotations in the submitted evidence are from the *Bacterial Therapist,* which is understood to be a house organ of the firm of G. H. Sherman. These contain glowing statements as to the value of the Sherman vaccines in respiratory diseases, but nothing which by the widest stretch of imagination can be considered as acceptable scientific evidence. For example, there is a letter from a physician which when closely examined is a strong argument for "shotgun" prescriptions of any type. Vaccines are not especially referred to, save that they are mentioned along with glandular extracts and other "shotgun" preparations.

The brochure also contains a statement to the effect that the "vaccine treatment of pneumonia is practically parallel to the treatment of diphtheria with antitoxin. The most marked results are obtained in the early stages of the disease." This statement is not warranted by the facts. It contains, too, a statement concerning the alleged reduction, by means of mixed vaccine, of the mortality of camp pneumonias to 6.3 per cent. It seems likely that the writer of this paragraph was not familiar with the fact that in controlled series of cases in army camps there were case mortalities of as low as from 3 to 8 per cent.—that is these figures were obtained in cases without special treatment of any kind.

Some of the men whose evidence is presented in the manuscript are admittedly enthusiasts. For example, one physician is quoted as stating that he is known as "a specialist in 'serum' therapy." Another physician states that he is an enthusiast on the use of vaccines and asserts that "I came out through the public press of ———— and advocated the use of them [vaccines] for the prevention of influenza."

In the evidence some examples of what was obviously the normal evolution of disease are cited and are attributed to the use of vaccines. For example, a physician reports a case of nephritis accompanying pregnancy which went to recovery after parturition. Some of the letters contained in the submitted evidence were evidently "inspired." For example, a physician states:

> "From a clinician's point of view, I believe the Council on Pharmacy, A. M. A., should pass the mixed formula stock vaccines as useful therapeutic and prophylactic agents."

Another writer states:

> "I can see no reason for the Council on Pharmacy of the A. M. A. not giving their indorsement to good reliable products of Bacteriological Laboratories."

In 1915, the Council adopted the following statement in reference to mixed vaccines for inclusion in New and Nonofficial Remedies:

> "The employment of bacterial vaccines should be based either on the discovery of the causative micro-organism by careful bacteriologic examination of the case under treatment or on well-established clinical knowledge which has shown the disease present to be regularly due to the activity of a definite germ. As a rule, one organism plays the predominant rôle and the destruction of the causative agent will effect a cure. In some cases, however, it has been found that two or more organisms are associated in producing the diseased condition. In such cases, a vaccine containing all the known causative antigens has been thought to be indicated. When this etiologic association has been determined by actual bacteriologic examination, a mixture of two autogenous vaccines or two corresponding stock vaccines may be expected to give good results. If the bacteriologic examination be omitted, the mixture rests on a purely hypothetical assumption and the method becomes wholly irrational."

Since then, the Council has admitted mixed vaccines to New and Nonofficial Remedies only when there was acceptable evidence for the rationality of the mixture and in 1918 in a report "Several 'Mixed' Vaccines Not Admitted to N. N. R." (Jour. A. M. A., June 22, 1918, p. 1967) which included one of the products discussed in this report, the Council restated its attitude toward "mixed" vaccines thus:

> "In view of the rapid development of bacterial therapy, the possibility for harm that attends the use of bacterial vaccines and the skepticism among experienced clinicians as to the value of vaccines representing a combination of organisms, the Council has felt that it should scrutinize the claims for such agents with exceptional care and that there should be admitted to New and Nonofficial Remedies only those vaccine mixtures for which there is acceptable evidence to indicate that the use of the particular mixtures is rational."

The evidence submitted by G. H. Sherman for the several mixtures now under consideration does not establish the

rationality of any of them. On the contrary, their use is bound to lead to haphazard therapy—particularly so because the trend of the Sherman advertising which accompanies the products under consideration is toward the use of vaccine mixtures. This advertises the complete line of Sherman vaccines. It contains a long list of diseases with recommendations for the use of vaccines, generally referred to by numbers rather than by names descriptive of the composition.

The following are some of the recommendations:

"The immunizing powers of stock vaccines are demonstrated by the prophylactic efficiency of typhoid vaccine. Bacterins made from selected, vigorous organisms are far higher immuno-producers than auto-vaccines prepared from feeble, degenerated organisms sometimes found in the patient's own specimens. Especially in acute cases, the PROMPT injection of a stock bacterin is decidedly preferable to the DELAYED injection of an autogenous one. The place for auto-vaccines is in chronic infections which fail to clear up under stock bacterins due to the probable presence of some unusual bacterium."

"*Abscesses.* In pus foci formed after accidental wounds, the staphylococcus is usually the invading organism, but streptococci if present are much more serious. Therefore, Sherman's No. 10 (polyvalent streptococcus and staphylococcus) should be at once employed and will often avoid permanent injuries. In lung abscesses, which are hardly possible in such cases of pneumonia which get vaccine treatment early, the indicated vaccine is Sherman's No. 6 (pneumococcus streptococcus-staphylococcus)."

"*Appendicitis.* In this serious inflammatory condition, the patient's life is dependent upon the control of the infectious process. Here No. 35 is a most efficient prophylactic of post-operative sepsis and remedy in cases where surgical interference is not advisable. The earliest possible vaccine injection gives the best results and all cases of tenderness over the appendix should receive a dose of vaccine by the attending physician at once to gain the advantages of early immunization. Meantime operative interference should not be neglected when indicated. Injections should be made at one to five days intervals until recovery is complete."

"*Eczema.* In acute cases of moist eczema, in which the skin is literally bathed with blood serum oozing from the follicles, local antiseptics are of little avail, but staphylococcus vaccine gives prompt relief. In chronic eczema, for which the digestive tract is particularly responsible, No. 35 is the vaccine of choice. See also gastro-intestinal infections."

"*Endocarditis.* Combined streptococcus vaccine (No. 6) should be given early; in the gonorrheal form, Sherman's No. 49 sometimes produces recovery."

"*Gynecological Infections.* . . . In obstetric cases, the prophylactic use of Sherman's No. 35 cannot be too strongly urged. The record of freedom from puerperal infections speaks for itself. The thrombophlebitis of pregnancy is due to the development of an infection of the thrombi in the veins beneath the placental site or from the pelvic veins extending to the larger veins. This condition usually sets in during the second week of the puerperium, and can then be aborted by prompt use of Sherman's No. 10 or 35, thus avoiding the pain and danger. When extensive thrombi develop, there is a general infection combined with plugging of large veins which interferes with the circulation in the leg, favoring metastatic formation; here also the vaccine is called for. This is far preferable to ligature of the pelvic vein by operative interference."

"*Laryngitis.* Sherman's No. 40 is used with success. See throat infections. In tubercular laryngitis, use T. B. Vaccine No. 45, the lesions improving visibly; see *Tuberculosis.*"

"*Nephritis.* The fact that inflammatory processes are usually due to infections and the presence of pyogenic organisms in the urine of nephritis cases indicates that this condition is due to an active infection of the kidney by these organisms. Where the case has not advanced to a condition of irreparable kidney destruction, excellent results have been obtained with No. 35 given at four to seven-day intervals. In advanced cases with extensive dropsical and constitutional disturbances only temporary relief should be looked for. In scarlatinal nephritis, Sherman's No. 42 or 35 should be given at once."

"*Ophthalmia, sympathetic.* It is quite probable that the involvement of the healthy eye is due to spreading of the infection from the diseased one along the sheath of the optic nerve. The vital necessity of saving the sight calls imperatively for the injection of vaccines for the purpose of arousing general immunization and thereby limiting the process. There can be no harm, and there may be priceless gain, to the patients from injections of Sherman's No. 6."

"*Pleurisy.* If Sherman's No. 6 is given early, the inflammation will be aborted with a resulting relief of pain and the production of a limited amount of pleuritic fluid."

"*Pneumonia.* . . . Such striking results cannot be expected when the vaccines are given after lung consolidation has occurred, but this is no reason for withholding the vaccine; it will still exercise a favorable influence on the congested portions and will limit the inflammatory area. A large majority of these cases recover by a slow but favorable lysis instead of by crisis. When the disease has advanced to extreme lung involvement, not much benefit can be expected from vaccines, but even here remarkable recoveries have been recorded."

The Council declared Erysipelas Vaccine No. 1, Pneumo. Mixed Vaccine No. 6, Strepto. Staph. Vaccine No. 10, Colon Bacillus Combined Vaccine (Modified Van Cott) No. 35, Friedlander Vaccine No. 36, Influenza Vaccine No. 38, Catarrhal Vaccine No. 40 and Whooping Cough Mixed Vaccine No. 43 inadmissible to New and Nonofficial Remedies because, in the light of the available evidence, their use is not in the interest of sound therapy and the public health and because they are used as a means of advertising other Sherman vaccine preparations which have not been accepted.

Correspondence

"TRANSPLANTING THE EYE"

To the Editor:—In view of the communication of Dr. Joseph Imre (THE JOURNAL, October 4, p. 1097), I ask space for the following statements:

1. Dr. Theodor Koppányi has been on the research staff of our laboratory since January 1 of this year. Some weeks ago there appeared in the Chicago daily papers statements of alleged reports made and results obtained by Dr. Koppányi in transplanting eyes in mammals. No such statements or information was given to the press by Dr. Koppányi. They were not authorized by the laboratory. The editors of the Chicago papers did not refer the stories either to Dr. Koppányi or to the laboratory for verification.

2. In view of Dr. Imre's insinuations against Dr. Koppányi personally and his remarkable dictum that the regeneration of the optic nerve is a "biologic absurdity," I feel compelled, in advance of publication, to state briefly the results so far obtained by Dr. Koppányi in our laboratory on eye transplantation in the spotted rat, results that I have controlled so that I can personally vouch for each fact. Dr. Koppányi's (and Kolmer's) earlier work on this problem in the laboratories of Przibram and of Durig were reported last year in the *Archiv für mikroskopische Anatomie und Entwickelungsgeschichte.*

In the majority of the experiments to date, the transplanted eyeballs have undergone varying degrees of pathologic changes, from complete necrosis to opacity of lens and cornea. The cause for the failures is, in part, infection. In the most successful experiments, the transplanted eyeball takes and retains its normal size, the initial opacity of the cornea clears up, the lens remains transparent, the corneal reflex returns, and, so far as we have been able to determine the presence of sight in the rat by tests in phototaxis and judgment of distance, some vision returns.

3. In view of past failures in attempting to secure regeneration of the severed optic nerve in the mammals, it has been held practically universally that the optic nerve, as a central path, has no power of regeneration. I shared in this view, but not to the extent of discouraging or ridiculing research on the problem, or trying to demolish facts with words. I controlled Dr. Koppányi's experiments in our laboratory. Dr. Imre has not seen them. But it still remains to be seen, through experiments, not through argumentation, whether the partial success on the spotted rat can be duplicated in the dog and the monkey; and if this is achieved, there remains the high percentage of complete or partial failure in the experimental animal to be converted into successes before any one is justified in work on man. But Dr. Koppányi's results on the rat have reopened what was considered a settled question. Someone should have informed Dr. Imre of the ability of the American newspaper reporter as a writer of fiction.

4. There is one true statement in Dr. Imre's letter, namely, that Dr. Koppányi is a student of biology and not an M.D. Dr. Koppányi has not posed as an M.D. But what has the matter of Dr. Koppányi's academic degrees to do with the question of regeneration of the eye? Who would propose that a physician's or a scientist's academic degrees are infallible measures of his ability and honesty? In the med-

ical sciences, as in all science, facts are facts, irrespective of the learning or lack of learning of the discoverer.

A. J. Carlson, Ph.D., Chicago.

Hull Physiological Laboratory,
University of Chicago.

To the Editor:—In the communication of Dr. Joseph Imre in The Journal, October 4, the following statements are made:

1. Dr. Koppányi declares in the newspaper interview that transplantation of the human eye with the return of vision is possible.
2. A year ago Dr. Koppányi filled the newspapers of Europe with these fantastic ideas.
3. Dr. Koppányi admitted that the optic nerve was not severed in his eye transplantation experiments.

These statements are not true.

Theodor Koppányi, Chicago.

Hull Physiological Laboratory,
University of Chicago.

"SHALL THE PUBLIC TAKE FULL RESPONSIBILITY FOR SMALLPOX?"

To the Editor:—Referring to Dr. Gage's letter on this subject (The Journal, September 20), I recall the spirited discussion of smallpox at the Association meeting in Los Angeles in June, 1911. In discussing the reports on smallpox by Dr. Spalding and Dr. Bracken which, with discussions, were published in The Journal, Oct. 14, 1911, I said in part:

I am highly pleased that so distinguished an authority as Dr. Bracken takes the stand he does on the question of quarantine. . . . What does quarantine do? It gives us a wall behind which the antivaccinationists can hide; they cry to the public: "Isolate cases of smallpox," and they can shoot into the scientific world with the material they gather from all sources and keep up a battle of that sort; whereas, if we turned our smallpox patient loose, we would see those people taking to the woods. They would get vaccinated, as shown by the epidemic in England, and especially when the thing came very close home the antivaccinationists got vaccinated and did not take smallpox.

A careful study of the subject and a practice of forty-four years in Wyoming and Colorado have convinced me that such a plan of handling the vaccination problem would be more successful than any other.

Emanuel Stuver, M.D., Fort Collins, Colo.

[Comment.—Despite the laxity of the vaccination laws in Minnesota, it has had as bitter an antivaccination fight during recent years as has been waged elsewhere. From 1913 to 1921, the median number of cases of smallpox reported per hundred thousand inhabitants yearly was 106, as against 1 in Massachusetts, 2 in New Jersey, and 3 in New York and Pennsylvania. In North Carolina, which has a lax law with respect to vaccination and to quarantine of smallpox, the rate was 94, which hardly makes a creditable showing as compared with the other states named, exclusive of Minnesota. Finally, some of the states in the Northwest have claimed that the high morbidity rates from smallpox attributed to them are due to the laxity of Minnesota legislation. —Ed.]

ANGINA PECTORIS

To the Editor:—In The Journal, September 20, the current comment on "Angina Pectoris" attracted my attention. The statement is made that the multiplicity of theories of its causation demonstrates the lack of unanimity. There is a class of anginas with all the earmarks of true angina, accurring in persons past middle life, in whom there are circulatory disturbances and the usual clinical features of this syndrome. If properly tested for left brachial neuritis, a large number or all of these will respond to the test. A definite diagnosis of neuritis may be made and thus the patient's mind relieved of fear of the more dangerous disease. We know that the left brachial plexus has a cardiac branch, and such a neuritis will convey all or practically all the symptoms of an angina.

To test, I use the static wave current, placing an electrode over the area. As the current is increased, a definite pain is referred to the usual site. There is never a painful response when there is no nerve inflammation. Treatment carried on by the use of the same remedy will eventually clear up the symptoms. This has occurred repeatedly in my practice in the last several years. It must not be understood that all are of this type, but there are many.

William Martin, M.D., Atlantic City, N. J.

FAMILIAL AMYOTONIA CONGENITA

To the Editor:—I was pleased to learn through Dr. Joseph Popper's communication (The Journal, September 20, p. 941) that he had reported two cases of amyotonia congenita in the same family, and sorry that in reviewing the literature I did not note this report. Faber also pointed out familial occurrence in three instances. In a letter, Dr. S. J. Goodman of Columbus, Ohio, states that he saw two cases, both fatal, in the same family, with Dr. H. H. Fisher of the same city, but does not say whether or not these cases were reported.

Morgan and Stuart (The Journal, April 15, 1922, p. 1106) write: "It does not appear to be hereditary, nor is there any special familial tendency to its occurrence," which is true, although apparently there have been a few such cases. Pearce (*Am. J. Dis. Child.* **20**:393 [Nov.] 1920) reports two sets of cases occurring in twins. Perhaps now that this phase of the subject has been brought up, we shall learn of other similar cases.

Gerald R. Allaben, M.D., Rockford, Ill.

THE SUPPLY OF PHYSICIANS

To the Editor:—The editorial in The Journal, September 27, is worthy of consideration. There is an unquestioned shortage of adequately trained physicians in the rural districts. Every physician knows why. The laity, save for a thoughtful and discriminating minority, does not recognize either the financial problem or the professional comradeship aspect. But it is the laity who, seeing the need, is quick to join any widespread movement that promises improvement. This is the "mass action" of the public. Neither deans nor councils nor state boards unaided can remedy the situation. Any attempt at a solution must recognize the gregarious instinct, the desire to achieve professional success and the ambition to provide generously for a family. These all are reasonable conditions. There is an experiment in process which may promise some degree of success. Almost every physician knows now and then a young man or woman giving promise of ability but without funds to finance a technical training and to maintain a family. A generous scholarship sufficient for medical training and supplemented by such financial stipend as may be necessary for five years might be given through the faculty of the medical school on condition that the beneficiary give five years of medical service in general practice in the rural region designated by the medical faculty or the state examining board.

Five years of general practice is a good preliminary for any specialty. Nothing develops individual resources better than general country practice. The financial aid would be a straight business proposition, the exchange of youth and ability for an assured income and a normal family life. During the experimental stage, the money must needs come from private endowment, such as the Carnegie or Rockefeller funds or special scholarships. But if ever state funds can be freed from partisan politics, the public treasury would get full

value for money expended for a measure so intimately related to public welfare.

Some such experiment might help solve the problem of so-called "federal paternalism" and unwise interference with medical practice. There would be at least freedom from elaborate machinery and the charge of creating offices for the dispensation of political patronage. The candidate would be under the control of the faculty, which gives the training, and the examining board, which grants the license. These two local bodies alone would be responsible for the professional fitness of the candidate. And the morbidity and mortality rate in rural communities would be cut down.

SARAH M. HOBSON, M.D., Chicago.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

ALKALIZATION BY FRUIT JUICES

To the Editor:—Recently at our county medical meeting the question of acidosis in ileocolitis and other infectious diseases of childhood came up and it was suggested to give fruit juices, such as orange and lemon juice, as a prophylactic and to relieve acidosis. Some present were of the opinion that to do so would be to add fuel to the flames; others approved the giving of the juices for the relieving of acidosis in such conditions. I wish to ask whether the procedure is proper in such conditions, and if so, what is the modus operandi of the alkalization of the body by the giving of fruit juices?

JESSE L. RUSSELL, M.D., Adairville, Ky.

ANSWER.—Acidosis as it occurs clinically is due to a variety of causes and manifests itself in different ways. These may be briefly outlined as follows:

1. Disturbances in the carbohydrate-fat metabolism with the resultant production of ketosis. This type occurs during starvation, during the course of fevers from any cause, in diabetes, following surgical operation, and in cyclic or recurrent vomiting. In these conditions, acetone bodies are present.

2. Acidosis of cardiorespiratory disease, as in congenital heart disease, cardiac decompensation, bronchial asthma, or any severe pulmonary involvement with asphyxia.

3. Incomplete oxidation of carbohydrates with the formation of lactic acid, as in severe muscular exertion, etc.

4. Acidosis of renal origin. This type is caused by the failure of the kidneys to excrete acid phosphates. There is no interference with the normal production of acids in the body, and the increase results from the failure of normal elimination of the acid phosphates through the kidneys. No acetone bodies are recovered from the urine.

5. In rare cases of hepatic functional insufficiency in which extreme fatty degeneration of the liver occurs with the production of leucin and tyrosin in the urine, accompanied by acetone and diacetic acid and with the clinical symptoms of severe acidosis. This type resembles phosphorus poisoning, which may also be associated with the clinical symptoms of acidosis.

6. Acidosis occurring in superficial burns of the body and in surgical shock due chiefly to a diminished volume flow of the blood. Acetone need not necessarily be present in the urine.

7. Acidosis occurring in diarrhea of infants and young children. This is the type of acidosis which occurs in the so-called ileocolitis or alimentary intoxication, according to our interpretation of the question.

Howland and Marriott showed that, in infants with this type of acidosis, the carbon dioxid tension of the alveolar air is low. The alkali tolerance is much increased. The alkali reserve of blood plasma is diminished, and there is no alteration in the hemoglobin dissociation curve. The characteristic deep breathing is present. These cases usually terminate fatally.

The acidosis is not the result of an excessive production of the acetone bodies, although these are at times moderately increased. At other times, in the presence of severe acidosis, they are within normal limits. The acidosis is in part explained by a failure of the kidneys to eliminate acid phosphates, the mechanism being similar to that in renal disease. The failure of the kidneys to eliminate acid in these cases is the result of a functional incapacity of the kidneys due to the fact that so much fluid has been lost from the body by other channels that the urine secretion becomes almost impossible. In these infants the urinary secretion is diminished; sometimes only 1 or 2 ounces daily is eliminated.

Because not all cases can be explained on the basis of diminished acid phosphate elimination mentioned above, Marriott has advanced the theory that the acidosis is due to the accumulation in the blood and tissues of acids resulting from incomplete oxidation. The incomplete oxidation is attributed to the greatly diminished volume flow of the blood. This condition is due to the concentration of the blood through loss of fluid.

The treatment of this condition calls for the administration of fluids by mouth, intravenously, intraperitoneally, or in whatever form they can be introduced. The question of the use of orange juice in these cases should now be considered. Orange juice contains eighty-seven parts of water, ten parts of fruit sugar or levulose, three parts of mineral ash, and a negligible quantity of acid. This fruit juice, administered internally, probably does no harm. Gerstenberger believes that under ordinary circumstances it is not laxative; indeed, he assumes that under normal conditions it tends to constipate. While this may be true in normal infants, it cannot be denied that the sugar content may lead to increased fermentation in pathologic conditions of the intestine. It must be conceded that increased fermentation would augment peristalsis and increase the diarrhea.

On the other hand, the orange juice would be of equal value to the administration of the same amount of water, and in addition would contain the nutrient sugar. The principal point to be emphasized, however, with reference to the use of the orange juice, is that the fruit sugar does not have an opportunity to act as an antiketogenic substance because this is not a ketogenic type of acidosis.

It is evident that the treatment of acidosis depends on the manner of its production, and that in the alimentary disturbances of infancy the best treatment consists in supplying fluids to compensate for the loss by diarrhea and nutrient fluids intravenously and small quantities of detoxicating food by mouth, small quantities of breast milk, buttermilk or protein milk. Recent investigations have shown that the use of alkalis in these conditions is of doubtful value.

It should be borne in mind also that the acids from the citrus fruits are oxidized in the body, forming bicarbonate, and thus exert an alkaline action after absorption. This does not occur after administration of mineral acids, tartaric and certain other organic acids.

THE PRESCRIPTION OF ALCOHOLIC LIQUOR

To the Editor:—1. Can a sheriff or other state officer lawfully say that a drug store shall not sell intoxicating liquor for medical purposes, even though it is ordered on prescription blanks furnished by the Treasury Department, by a physician holding a federal license? 2. Can a physician procure a book of federal liquor prescription blanks oftener than once in ninety days? 3. Can a physician give more than one prescription to one patient during a period of ten days?

———, M.D., Louisiana.

ANSWER.—1. It is the duty of a sheriff to prevent the sale of liquor in violation of law, and particularly in violation of state law. A federal permit gives neither physician nor druggist the right to ignore state law.

2. A physician may obtain more than one book of prescription blanks for use in a ninety-day period if he can convince the Commissioner of Internal Revenue that for some extraordinary reason more than one book is necessary; but he cannot obtain more than one book at one time. Applications for additional books must be filed with the state prohibition director.

3. There is no limit on the number of prescriptions a physician may issue for one patient in ten consecutive days—except the number of official prescription blanks lawfully obtainable by the physician; but whether one prescription be written, or any larger number, the total amount of spirituous liquor prescribed in ten days must not exceed 1 pint.

CRYING IN UTERO

To the Editor:—An unborn child, in utero, cried repeatedly and so loudly that it was distinctly audible in an adjoining room. The mother, aged 38, a primipara, had been in labor for four days. The sack had ruptured and the water had, of course, drained. An attempt to deliver with high forceps was made, which allowed air to enter, which was immediately followed by the crying mentioned. We were unable to deliver the child with forceps. The patient was taken to the hospital,

where a perfectly healthy, lively 10-pound girl was born by cesarean section. Mother and child at this date—one week later—are doing very well. Dr. James Fisher, his wife, two nurses, myself and others were present when this occurred. It may be very common, but I have never heard of it, and thought it might be of interest even if of no importance.

C. M. Harrison, M.D., Napoleon, Ohio.

Answer.—As has been pointed out previously in The Journal, the possibility of the mature fetus crying in utero is indisputable. Vagitus uterinus, as it is called, is, however, exceedingly rarely heard. It is not uncommon for a child in utero to have more or less violent movements due to an intra-uterine asphyxia; during such convulsive efforts there is generally a participation of the respiratory muscles of the chest and diaphragm. If the membranes have been ruptured, and air reaches the nostrils and mouth, a cry may be produced of sufficient intensity to be heard by those present. In addition to the asphyxia, some writers maintain that some stimulus to the fetal skin must be given; for instance, the operator's hand in the act of performing a version. At any rate, it is in the production of an internal version that the introduction of air is most likely to occur and, therefore, crying to be elicited. The citation of cases of vagitus in which the membranes are intact is purely apocryphal.

PHARMACOLOGY OF THE PAPAW

To the Editor:—I am seeking information in regard to our native papaw. What action or reaction may be obtained from the fruit, of the rind, leaves, bark, root and seed? What medicinal properties? For what symptoms, conditions, ailments or diseases can it be used? That the fruit cannot be eaten by some persons is well known. On the other hand, "some can live and thrive on it" and use it freely. Are there any "good effects" to be derived from the free use of the fruit?

Robert Hessler, M.D., Indianapolis.

Answer.—The American papaw (*Asimina triloba* Family *Anonaceae*) is to be sharply distinguished from the tropical papaw (*Carica papaya* Family *Caricaceae*). The juice obtained by excising the unripe fruit of the latter plant and drying contains a ferment (papain) and has been used to some extent in medicine as an artificial digestant; its activity, however, is variable and always less than pepsin. The American papaw is a shrub or small tree which flourishes best in the timbered lands of the Ohio Valley. The fruit is a fleshy, oblong pod, about 1 inch by 3 inches, which contains an edible pulp in which are embedded a number of flat, brown seeds. All parts of the plant contain a volatile oil, which has an unpleasant odor. The bark contains a bitter principle, a fixed oil and a resin as well as dextrose. The bark has been used as a bitter tonic in domestic medicine, but its pharmacologic properties are unknown. The seeds contain an alkaloid, asiminin, which is stated to have emetic properties. A tincture of the seeds has been used as an emetic. The edible pulp of the fruit is said to be mildly laxative. None of these substances have received recognition in scientific medicine.

SYMPATHETIC RAMISECTION FOR SPASTIC PARALYSIS

To the Editor:—What is the nature of the cure for Little's disease which has been discovered in Australia? Please refer me to the literature on this subject.

Nathan Brumer, M.D., Brooklyn.

Answer.—Drs. Royle and Hunter, working in Australia, have recently reported the treatment of spastic paralysis by resecting rami of the sympathetic nervous system. The experimental basis and therapeutic results of this treatment are described in the following references:

Hunter, J. I.: Postural Influence of Sympathetic Innervation of Voluntary Muscle, *M. J. Australia* **1**: 86 (Jan. 26) 1924; (supplement) **1**: 124 (March 15) 1924.

Royle, N. D.: New Operative Procedure in Treatment of Spastic Paralysis and Its Experimental Basis, *M. J. Australia* **1**: 77 (Jan. 26) 1924.

Royle, N. D.: Problem of Treatment of Spastic Paralysis, *M. J. Australia* (supplement) **1**: 125 (March 15) 1924.

Royle, N. D.: Aetiology of Anterior Metatarsalgia, *M. J. Australia* **2**: 9 (July 5) 1924.

Royle, N. D.: Operations of Sympathetic Ramisection, *M. J. Australia* **1**: 587 (June 14) 1924.

Hunter, J. I.: On Choice of Procedure Adopted in Operation of Ramisection for Spastic Paralysis, *M. J. Australia* **1**: 590 (June 14) 1924.

Hunter, J. I.: Significance of Double Innervation of Voluntary Muscle Illustrated by Reference to Maintenance of Posture of Wing, *M. J. Australia* **1**: 581 (June 14) 1924.

Royle, N. D.: Living Suture in Tendon Transplantation, *M. J. Australia* **1**: 333 (April 5) 1924.

Royle, N. D.: Treatment of Inequality of Length in Lower Limbs, *M. J. Australia* **1**: 716 (June 30) 1923.

Royle, N. D.: Treatment of Flaccid Paralysis, *M. J. Australia* **2**: 351 (Oct. 6) 1923.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

Arkansas: Little Rock, Nov. 11-12. Sec., Regular Board, Dr. J. W. Walker, Fayetteville. Sec., Homeopathic Board, Dr. George M. Love, Rogers. Sec., Eclectic Board, Dr. C. E. Laws, Fort Smith.

California: Sacramento, Oct. 20-23. Sec., Dr. Charles B. Pinkham, 908 Forum Bldg., Sacramento.

Connecticut: New Haven, Nov. 11. Sec., Homeopathic Board, Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven.

Connecticut: Hartford, Nov. 11-12. Sec., Regular Board, Dr. Robert L. Rowley, 79 Elm St., Hartford.

District of Columbia: Washington, Oct. 14. Sec., Dr. Edgar P. Copeland, Stoneleigh Court, Washington.

Florida: Tallahassee, Oct. 14-15. Sec., Dr. Wm. Rowlett, Citizens Bank Bldg., Tampa.

Georgia: Atlanta, Oct. 14-16. Sec., Dr. C. T. Nolan, Marietta.

Hawaii: Honolulu, Oct. 13-16. Sec., Dr. G. C. Milnor, 401 So. Beretania St., Honolulu.

Kansas: Topeka, Oct. 14. Sec., Dr. Albert S. Ross, Sabetha.

Maine: Portland, Nov. 11-12. Sec., Dr. Adam P. Leighton, Jr., 192 State St., Portland.

Massachusetts: Boston, Nov. 11-13. Sec., Dr. Charles E. Prior, 144 State House, Boston.

Michigan: Lansing, Oct. 14-16. Sec., Dr. B. D. Harison, 707-8 Stroh Bldg., Detroit.

Missouri: Kansas City, Nov. 10-13. Sec., Dr. Cortez F. Enloe, Capitol Bldg., Jefferson City.

Nevada: Carson City, Nov. 3. Sec., Dr. S. L. Lee, Carson City.

New Jersey: Trenton, Oct. 21-22. Sec., Dr. Alex Macalister, State House, Trenton.

New Mexico: Santa Fe, Oct. 13-14. Sec., Dr. W. T. Joyner, Roswell.

Oklahoma: Oklahoma City, Oct. 14-15. Sec., Dr. J. M. Byrum, Shawnee.

South Carolina: Columbia, Nov. 11. Sec., Dr. A. Earle Boozer, 505 Saluda Ave., Columbia.

Texas: Dallas, Nov. 18-20. Sec., Dr. T. J. Crowe, 918-19 Mercantile Bank Bldg., Dallas.

West Virginia: Charleston, Oct. 28. Sec., Dr. W. T. Henshaw, Charleston.

Georgia June Examination

Dr. C. T. Nolan, secretary, Georgia Board of Medical Examiners, reports the written examination held at Atlanta and Augusta, June 4-6, 1924. The examination covered 10 subjects and included 100 questions. An average of 80 per cent. was required to pass. Seventy-nine candidates were examined, all of whom passed. Eleven candidates were licensed by reciprocity. The following colleges were represented:

College	Passed	Year Grad.	Per Cent.
Emory University	(1924, 46) 87, 87, 88, 88, 88, 88, 88, 88, 88, 88, 89, 89, 89, 89, 89, 89, 89, 89, 89, 89, 89, 90, 90, 90, 90, 90, 90, 90, 90, 90, 90, 90, 91, 91, 91, 92, 92, 92, 92, 92, 92, 93, 94, 95		
University of Georgia Medical Department	(1924, 30) 87, 88, 88, 89, 89, 89, 89, 90, 90, 90, 90, 90, 90, 90, 90, 91, 91, 91, 91, 91, 92, 92, 92, 92, 92, 93, 93, 94, 94, 94		
University and Bellevue Hosp. Med. Coll	(1922)		92
Meharry Medical College	(1912) 80, (1923)		83

College	Licensed by Reciprocity	Year Grad.	Reciprocity with
College of Medical Evangelists	(1921)		California
Johns Hopkins University	(1915) Maryland, (1915)		New Jersey
University of Minnesota	(1901)		Minnesota
Columbia University	(1901)		S. Carolina
Eclectic Medical Institute, Cincinnati	(1907)		Iowa
University of Pennsylvania	(1911)		Alabama
Med. Coll. of the State of S. Carolina	(1923)		S. Carolina
Chattanooga Medical College	(1894) Alabama, (1907)		Tennessee
Vanderbilt University	(1912)		Tennessee

Mississippi June Examination

Dr. F. J. Underwood, secretary, Mississippi Board of Health, reports the written examination held at Jackson, June 17-18, 1924. The examination covered 12 subjects and included 96 questions. An average of 75 per cent. was required to pass. Of the 21 candidates examined, 20 passed and 1 failed. Thirteen candidates were licensed by reciprocity. The following colleges were represented:

College	Passed	Year Grad.	Per Cent.
Northwestern University	(1924)*		88.6
Tulane University	(1924, 8) 86.5, 88.5, 88.8, 89, 89.5, 89.7, 90, 90		
Washington University Medical School	(1924, 3) 88.6, 89.9, 90.4		
Columbia University	(1924)		90
University of Pennsylvania	(1924, 3) 91, 92.5, 94.8		
Meharry Medical College	(1923)		78
University of Nashville	(1906)		77
University of Tennessee	(1924, 2)		86, 89

College	FAILED	Year Grad.	Per Cent.
Tulane University		(1920)	64.7

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Atlanta Medical College		(1914)	Georgia
University of Illinois		(1916)	Illinois
Tulane University		(1919, 2)	Louisiana, (1923) N. Carolina
College of P. & S., Baltimore		(1913)	Wisconsin
Meharry Medical College		(1923)	Tennessee
Memphis Hospital Medical College		(1913)	Tennessee
University of Nashville		(1902)	Louisiana
University of Tennessee		(1909)	Alabama, (1911) Tennessee
Vanderbilt University		(1888)	Louisiana
Medical College of Virginia		(1898)	Virginia

* This candidate has completed his medical course, and will receive his M.D. degree on completion of a year's internship in a hospital.

Book Notices

THE PLANT ALKALOIDS. By Thomas Anderson Henry, D.Sc., Director, Wellcome Chemical Research Laboratories. Second edition. Cloth. Price, $8.50. Pp. 456, with 8 illustrations. Philadelphia: P. Blakiston's Son & Co., 1924.

Ever since the first edition appeared, a little more than ten years ago, this work has been recognized as a most authoritative treatise. Several works on the alkaloids have appeared in the meantime but, being less comprehensive, these have not displaced Henry's compilation in the hands of the critical worker. In the decade during which the first edition has been in use, much progress has been made in alkaloidal chemistry, both in the study of the constitution of the better known alkaloids and in the investigation of new or little known ones. Depending on their chemical constitution, alkaloids have been classified in several groups. From the standpoint of the nucleus, the following groups are considered in this work: pyrrol; pyridin; tropan; quinolin; *iso*quinolin; indol; glyoxalin; purin; alkaloids derived from aliphatic amins, and alkaloids of unknown constitution. The most important alkaloids are considered from the standpoint of occurrence, and the chemical and physical properties, including constitution, estimation and physiologic properties; and some attention is given to synthesis. The information given on the chemical and physical properties of the alkaloids and their compounds is almost enclycopedic. Considerable attention is given to the correlation between chemical constitution and pharmacologic action, a phase which is not well understood but which is rapidly assuming importance in pharmacology. Most of the reactions described are qualitative rather than quantitative, the methods for determination largely being left to the more highly specialized works. This would be regretted were it not that a serviceable bibliography is appended to each topic which enables the consultant to find analytic methods readily. Since many of the alkaloids are of great importance in medicine and toxicology, their manufacture is an important branch of chemical industry. Therefore, the technical methods of isolation and separation are given briefly so far as they have been made public by manufacturers. The book is evidently written with the view of its being useful to analytic chemists, pharmaceutical manufacturers, teachers, physicians and toxicologists. The compilation is so thorough and the discussions so complete that the consultant will not often need to refer to other works unless highly specialized information is desired.

KURZES LEHRBUCH DER CHEMIE IN NATUR UND WIRTSCHAFT. Von Prof. Carl Oppenheimer, Dr. Phil. et Med., nebst einer Einführung in die allgemeine Chemie, von Prof. Johann Matula. Paper. Price, $5.65. Pp. 862, with 27 illustrations. Leipsic: Georg Thieme, 1923.

This book aims to give a general reading knowledge of the fundamentals of chemistry, both organic and inorganic. Obviously, in a work of a little more than 800 pages, excluding the index, it is impossible to give much more than the outlines of the broader phases of the science. The work covers substantially the same ground as does Bloxam's chemistry in English, reviewed in THE JOURNAL, Oct. 27, 1923, p. 1465. In general, the treatment of the subject matter is less satisfactory and complete than in Bloxam's work. In addition to a description of the individual elements, as in most works in general chemistry, there are special chapters devoted to single topics, such as the periodic system, radioactivity, photochemistry, electrochemistry and crystallography. The book should prove excellent as a reference work for teachers of chemistry in high schools as well as for students in the earlier chemistry courses in colleges. Advanced students and those requiring detailed information, naturally, must consult more highly specialized or technical works.

MEDICAL GYNECOLOGY. By Samuel Wyllis Bandler, M.D., Professor of Gynecology, New York Post-Graduate Medical School and Hospital. Fourth edition. Cloth. Price, $8. Pp. 930, with 158 illustrations. Philadelphia: W. B. Saunders Company, 1924.

In addition to the ground usually covered by textbooks on gynecology, the author has given especial attention to treatment by physical measures and has reviewed the literature on vitamins and endocrine glands as related to the diseases of women; the latter subject is one which Dr. Bandler discusses most optimistically. The chapter on constipation is the work of Dr. George Mannheimer, and that on syphilis is contributed by Dr. Walter Highman; urinary diseases of women are discussed by Dr. Walter T. Dannreuther. The outstanding feature of the book is the omission of the material frequently copied from text to text, and the attention to simple, up-to-date methods of diagnosis and treatment.

THE HAPPY BABY. Edited by Dr. L. Emmett Holt. Contributors: Dr. L. Emmett Holt, Dr. Harvey J. Burkhart, Dr. Ralph Lobenstine and Dr. Henry L. K. Shaw. Cloth. Price, $1. Pp. 120. New York: Dodd, Mead and Company, 1924.

Since 1922, the *Delineator* has been publishing a series of articles on the "Care of the Child." The earlier articles in this series were edited or written by Dr. L. Emmett Holt, who was responsible for the direction of the "Happy Child Department" in this periodical. Following the death of Dr. Holt, the department has been continued by Dr. Henry L. K. Shaw. In addition to these two writers, however, several other authorities on the diseases of children aided in preparing material for the department. The present volume is essentially a reprint of the series, and includes the general care of the baby, by Dr. L. Emmett Holt; the care of the expectant mother, by Dr. Ralph Lobenstine; maternal nursing, artificial feeding and diet problems of childhood, by Dr. L. Emmett Holt; early childhood, by Dr. Henry L. K. Shaw, and the child's teeth, by Dr. Harvey J. Burkhart. The book is printed in pleasing form with good-sized type, and contains, while small in content, practically all the facts that the mother should know if she is to have a really happy baby.

THE CARE OF TUBERCULOSIS. A Treatise for Nurses, Public Health Workers, and All Those Who are Interested in the Care of the Tuberculous. By J. A. Myers, Ph.D., M.D., Assistant Professor of Preventive Medicine and Public Health, Graduate and Medical Schools, University of Minnesota. With an Introduction by Richard Olding Beard, M.D., Associate Professor of Physiology, University of Minnesota. Cloth. Price, $2 net. Pp. 229. Philadelphia: W. B. Saunders Company, 1924.

This is intended primarily for the use of nurses and public health workers. As might be expected, such a book can hardly contain anything new; but what it does contain is well arranged and simply presented. There are useful chapters on the psychology of the tuberculous patient, opportunities for nurses, and the rôle of nurses in the tuberculosis campaign. The book closes with a list of recent literature on the subject of tuberculosis.

DIABETES, ITS TREATMENT BY INSULIN AND DIET. A Handbook for the Patient. By Orlando H. Petty, B.S., A.M., M.D., Professor of Diseases of Metabolism, Graduate School of Medicine, University of Pennsylvania. Cloth. Price, $1.50 net. Pp. 111, with 6 illustrations. Philadelphia: F. A. Davis Company, 1924.

The cause of diabetes and the principles of dietetic and insulin treatment are here presented for the layman. Foods are listed according to their caloric value, the proportion of carbohydrate, fat and protein, and their vitamin content. Sample menus and recipes are appended. There are clear directions for the weighing and measuring of foods, for the estimation of diets, and for the performance of Benedict's test for urine sugar. The technic of subcutaneous injections is given, with directions of the care of syringes.

Miscellany

THE HEALTH PROGRAM OF THE MILBANK MEMORIAL FUND

The Milbank Memorial Fund is a beneficent organization whose board of directors controls the expenditure of the income on an estate with a present valuation of more than $9,000,000. One member of this board is a physician, and the board is further advised by physicians who constitute a majority of a technical board and advisory council. During its earlier years, the fund subscribed to various existing agencies in the fields of public health, social welfare and relief work, but the belief that the application of the Milbank fortune to the ends outlined by Mrs. Elizabeth Milbank Anderson, "to improve the physical, mental and moral condition of humanity and generally to advance charitable and benevolent objects," could best be achieved through public health enterprises led to a more concentrated health program. The sum of $215,618 was devoted to public health work in 1923. Parts of these funds went to various health centers in New York City; to a statistical study of the relation of the prevalence of house flies to diarrheal disease; to the forwarding of better school lunches in New York City schools, to the support of public baths, to the establishment of a neighborhood model wet wash, to a study of ventilation, to the National Committee for Mental Hygiene, and to other scattered endeavors. However, the major part of this public health expenditure was devoted to health demonstrations in three representative localities in New York, in which an attempt was made to supply all the known modern methods of health control.

Since the program for these demonstrations is planned on a five year basis, the report of the fund for 1923, which covers only the first year's work, necessarily includes more of plans than of accomplishments. The selection of the demonstration areas was based on preliminary surveys and on the willingness to cooperate of the local health departments, medical organizations, and public and private welfare organizations. It was considered of the first importance that the experiment of applying at one point all the methods that modern knowledge has envolved in the improvement of sanitation and the prevention of disease should be an experiment of the people and not on the people. Therefore, the preliminary surveys ascertained not only that the localities chosen were representative in their social and economic life, without abnormal death rates, or an unusual admixture of nationalities, or other special factors which would vitiate their findings as examples of the average rural and city life in the United States, but also to select communities that gave promise of taking over the administration and support of such activities as were proving of greatest value. By the end of 1922, Cattaraugus County, in western New York, had been named as the site of the rural demonstration; Syracuse had been selected for the urban community; and the Bellevue-Yorkville districts of New York City for the metropolitan area.

The general plan of attack concerns the problems of tuberculosis, other communicable diseases, school hygiene, maternity, infancy and child hygiene, social hygiene, mental hygiene, industrial hygiene, sanitation and food inspection, health conservation and life extension. For several of these aspects of health work, a detailed program is offered. Thus, in combating tuberculosis, effort will be expended along the following lines:

1. Case finding, including active and arrested cases of tuberculosis, those predisposed to tuberculosis because of contact, or of unhygienic living conditions, or by reason of a state of poor nutrition.

2. Establishing expert consultation service.

3. Provision of medical care for the tuberculous, by means of dispensaries and home care for the poor, and by consultation and visiting nursing services for the patients of private physicians.

4. Educational measures, including postgraduate courses for physicians and instruction to the laity in the home care of a patient and the prevention of infection.

5. Follow-up measures, to consist of the periodic examination of active and arrested cases of tuberculosis, and of those in the groups of contacts and those otherwise predisposed to tuberculosis.

6. To increase the use of institutions. These might include sanatoriums, home hospitals, day homes, day preventoriums and open air school classes. The home hospital plan has been developed in New York City, where model tenements have been utilized for the care of patients without separation from their families. This is advisable when the absence of the mother or of both parents would mean sending small children to child-caring institutions, and permits easy supervision of contacts in the home. Day homes would be designed for tuberculous mothers, and day preventoriums chiefly for preschool children whose mothers were too ill to care for them, or who might need special supervision because of predisposition to tuberculosis.

7. Occupational therapy for tuberculous patients, with machinery for placement of arrested cases, and supervision of those employed.

8. Relief. This might entail the preparation of budgets, the study of the resources of a family, and the use of visiting housekeepers, dietitians and nurses.

The program for other communicable diseases includes reporting of cases, verification of diagnosis, with consulting service, laboratory diagnostic service, isolation, the study of minor outbreaks with care of contacts, terminal cleansing, free supply of vaccines and serums, hospitalization when needed, and education in the dangers and means of prevention of such diseases.

The maternity, infancy and child hygiene plans call for the consulting service of specialties in obstetrics and pediatrics, the establishment of prenatal clinics, of infant and child health clinics, dental service for expectant mothers and for children, the preparation of clean supplies for home confinements or the securing of hospitalization, postgraduate instruction of physicians, and lay education.

As has been stated, the demonstration is at present a plan rather than an accomplishment. The report for 1923 notes the establishment in the selected rural district of the first county health board in New York State, of a laboratory service for milk and water examinations and for bacteriologic diagnosis, of a tuberculosis diagnostic and consultation service directed by the superintendent of the county tuberculosis sanatorium, of a campaign for diphtheria immunization, and other measures. In Syracuse, existing public health measures were extended. A postgraduate course for local practitioners, in the diagnosis and treatment of tuberculosis, put on with the cooperation of the medical department of Syracuse University, was well attended.

The directors of the fund expect to evaluate the results of an investment which may run to $2,000,000 during the five demonstration years, not only on the evidence of vital statistics, but also on the willingness of these and other communities to make permanent the measures introduced. The medical profession as a whole will further test the value of this expenditure and effort by the character of the measures instituted.

COMMUNITY ORAL HYGIENE

In a four year demonstration of community oral hygiene in the Mulberry district of New York by the New York Association for Improving the Condition of the Poor, the work was at first confined to children, and emphasis was placed on prophylaxis. It was considered essential to the program that (1) there be prophylactic cleanings of the teeth of children at least once a year, and twice a year if possible, for children in the first five grades of school; (2) unsavable diseased teeth be extracted to put the mouth in a hygienic condition; (3) prophylactic fillings, to prevent decay, be provided in all first permanent molars and reparative fillings in all first molars; (4) nitrate of silver be used to arrest decay in deciduous teeth, which are retained the longest. The demonstration began in October, 1919, in a public school,

with a full-time dental hygienist. In the following January, a dentist was secured on half time, and by June the work had developed so that a dentist with executive ability was needed to direct the staff. The staff now consists of two full-time dentists, two half-time dental hygienists, and a supervisor. The association has made four annual surveys of the teeth of children in Public School 106, where the most intensive work has been done. There has been a reduction from 85.4 to 46.4 per cent. in the number of children who required fillings, and the proportion needing extractions has been reduced from 40.3 to 32 per cent. About 3,000 children have been served each year in the dental clinics, but about 1,200 of them have received intensive care. The gross per capita cost of this work for the first year that complete records were available was $4.17; in the following year it had been reduced to $3.79, and during the last year it was $3.99. The increase is due, in part, to extending this service to preschool children, which involved a considerable loss of time because of unkept appointments. It seems reasonable to conclude, the report continues, that a dental service of this kind costs about $4 per child reached. The demonstration has proved that a dental service carried on as an integral part of the daily school program produces the most lasting results, and that when the dental clinic is in the school building, children can be sent directly from the schoolroom to the clinic with a minimal waste of time and minimal confusion. There was a hearty cooperation of school officials which could hardly have been secured if the clinic had not been in the school building.

Medicolegal

Terms "Practice" and "Actual Practice" Construed

(People ex rel. Gillespie v. La Barre et al. (Calif.), 224 Pac. R. 750)

The Supreme Court of California, in holding ineligible five members of the state board of chiropractic examiners appointed under the initiative act of 1922, says that it was admitted that none of them was ever the holder of a license or certificate issued by the state medical board to practice, either as a physician and surgeon, or as a drugless practitioner, but that all treatments administered by them or either of them for the period of three years before the act went into effect were administered without authority of law and in violation of law. The court does not think that their appointment was authorized by the provision of the act that:

> Each member of the board first appointed hereunder shall have practiced chiropractic in the state of California for a period of three years next preceding the date upon which this act takes effect, thereafter appointees shall be licentiates hereunder.

The word "practice" means, of course, engagement in the treatment or healing of the sick in accordance with the rule that the state in the exercise of the police power has prescribed. It is not necessary to read into the act the word "lawful" or "legal" before the word "practice," in order to justify the conclusion that the act contemplates the holding of a license under the Medical Practice Act as a prerequisite for eligibility on the part of an appointee to membership in the board. Lawfulness is a fixed element which inheres in every statute. It is a fundamental principle of law that a right cannot be founded on a wrong. But, without resorting to rules of statutory construction, it seems clear to the court that the first meaning that the average person would give to the word "practice," as used in an act applying to a practitioner of medicine and surgery, or to others employing any of the methods of treatment recognized by the state, is that such practitioner should possess all of the qualifications required by law, and shall have complied with all rules governing such practice. How is the state to know whether applicants for appointment possess the standard qualifications except by applying its legal test? The act is silent as to any method or procedure by which qualification is to be otherwise determined. This being so indicates that the standard fixed by law must be the only true criterion of qualification.

Likewise, the court holds that the credits to which applicants for licenses under the act are entitled for each year of "actual practice," as provided by the act, are based on lawful or legal practice as prescribed by the Medical Practice Act, which formerly was the only act governing the subject. The phrase "actual practice" is open to but one construction. It is the opposite of casual or occasional or clandestine practice, and carries with it the thought of active, open and notorious engagement in a business, vocation or profession. It is not to be presumed that a person would boldly engage in active and open violations of the law for a period of three years, or that he would be permitted to do so if he so willed.

Origin of Needle in Operation Wound a Question for Jury—"Good and Careful Surgeon" Construed

(Ingram v. Poston (Mo.), 260 S. W. R. 773)

The St. Louis (Mo.) Court of Appeals, in affirming a judgment for $3,725 in favor of the plaintiff, says that about a month after she had suffered a miscarriage and a local physician had performed a curettement, the defendant operated on her for appendicitis, employing the Coyle method of giving a small dose of ether and then injecting procain along the incision. The abdominal wall in this patient was nearly 6 inches thick from skin to cavity. The plaintiff seemed to recover from the operation and was removed to her home in about four weeks, and the defendant did not attend her further. After leaving the hospital, the plaintiff developed a fever and in about six or eight weeks an abscess began to form at the point where the incision had been made. She developed chills, and pus formed. This condition, according to the plaintiff's evidence, continued off and on for over three years. She developed eruptions and blotches on her body, intermittently, accompanied by fever. About three years and eight months after the appendectomy, having again developed pus in the wound, the plaintiff, as she testified, pressed the wound, and the butt end of a hypodermic needle was emitted from the sore at the place of the old appendectomy incision. The plaintiff testified further that from the time of the appendectomy until she extracted this base of the needle no opening had been made in her abdomen or in her side, nor anything inserted into it; that no operation had been performed on her during that period, and that no instrument of any kind had been inserted into her body; that immediately after taking out the needle end the wound began to heal, and within six months she was well.

The defendant testified that the plaintiff had an infection as the result of a miscarriage, suffered from chills and fever, and was an intensely nervous woman; that the syringe used in this case was a record 20 c.c. hypodermic, having a needle at least 1½ to 2 inches long; that the whole syringe would be 7 or 8 inches long; that this large hypodermic syringe was the only one used about this patient at any time while he had her in his charge. When handled the stub of the needle which the plaintiff had made an exhibit in the case, and which she had testified to as having come out of the wound, the defendant was asked whether he had used such needle at any time in treating the plaintiff, to which he answered that he had not, explaining that the needle was too short and too weak. It was also his testimony that he did not use a "screw-in" needle, but one that would be pressed over the syringe without threads, while the one found in the plaintiff had threads on it. There was also evidence for the defendant tending to show that the needle found in the woman was such as is used in skin and arm injections, and not such as is used for deep injections when the Coyle method is used.

It was argued that there was not sufficient evidence to support the averment that the defendant caused this part of the hypodermic syringe to be left in the plaintiff's body, and no proof that he carelessly failed to remove it before closing the incision. But the court is of the opinion that there was enough evidence from which the jury could reasonably draw the inference that the defendant left this piece of syringe in the plaintiff's abdomen at the time he operated on her. It was true that the defendant himself, together with other witnesses, gave testimony contradicting this, and if the defendant was to be believed it would have been an impossibility for this particular needle to have gotten into the wound at that time because the defendant said no such needle was used in the operation. However, it was for the jury to determine from all the facts and circumstances whether the plain-

tiff, who testified that no other operation had been performed on her and no other hypodermic syringe had been used about her body from the time this operation was performed until the piece came out of the wound, was to be believed, and, if so, the inference might follow that the defendant left it in her body.

An instruction authorizing a recovery of damages if the "defendant failed to exercise the care and skill as would ordinarily be exercised by good and careful surgeons," the court does not think imposed a greater duty on the defendant than to exercise that degree of care exercised by members of his profession in good standing—in his specialty—namely, surgery. (Rehearing denied.)

Society Proceedings

COMING MEETINGS

American Association of Railway Surgeons, Chicago, Oct. 15-17. Dr. Louis J. Mitchell, 29 East Madison Street, Chicago, Secretary.
American Child Health Association, Kansas City, Mo., Oct. 15-17. Dr. Philip Van Ingen, 125 East 71st Street, New York, Secretary.
American College of Radiology and Physiotherapy, Chicago, Nov. 12-14. Dr. Roy W. Fouts, 121 South 33d Street, Omaha, Secretary.
American College of Surgeons, New York, Oct. 20-24. Dr. Franklin H. Martin, 40 East Erie Street, Chicago, Director-General.
American Public Health Association, Detroit, Oct. 20-23. Mr. Homer N. Calver, 370 Seventh Avenue, New York, Secretary.
Association of Military Surgeons of the United States, San Antonio, Tex., Nov. 13-15. Major E. E. Hume, M. C., U. S. Army, Army Medical Library, Washington, D. C.
Central States Pediatric Society, Rochester-Minneapolis, Oct. 30-31. Dr. H. T. Price, Westinghouse Building, Pittsburgh, Secretary.
Delaware State Medical Society, Milford, Oct. 14-15. Dr. W. O. LaMotte, Industrial Trust Building, Wilmington, Secretary.
District of Columbia, Medical Society of, Washington, Dec. 3. Dr. C. B. Conklin, Medical Science Building, Washington, Secretary.
Interstate Post-Graduate Assembly of America, Milwaukee, Oct. 27-31. Dr. W. B. Peck, 82 Stephenson St., Freeport, Ill., Managing Director.
Medical Association of the Southwest, Kansas City, Mo., Oct. 13-18. Dr. E. H. Skinner, Rialto Building, Kansas City, Mo., Secretary.
New York and New England Association of Railway Surgeons, New York, Oct. 25. Dr. Horace H. Le Seur, Batavia, N. Y., Secretary.
Southern Medical Association, New Orleans, La., Nov. 24-27. Mr. C. P. Loranz, Empire Building, Birmingham, Ala., Secretary.
Virginia, Medical Society of, Staunton, Oct. 14-17. Miss Agnes V. Edwards, 104½ West Grace Street, Richmond, Secretary.
Western Surgical Association, French Lick Springs, Dec. 4-6. Dr. Harry P. Ritchie, Lowry Building, St. Paul, Secretary.

INTERNATIONAL CONFERENCE ON HEALTH PROBLEMS

Held in Kingston, Jamaica, July 23-31, 1924

Treatment of Oriental Sore by Means of Phosphorus

DR. ALDO CASTELLANI, London: Two years ago I devised a new treatment for oriental sore in the form of the ordinary phosphorus oil of the British Pharmacopeia. The treatment consisted in the local application of the oil if the lesion is extensively ulcerated, and if the nodule is not ulcerated or only slightly so. In addition to the external application, from 3 to 5 minims (0.2 to 0.3 c.c.) of the oil is injected under the skin around the nodule and also at times deep into the nodule itself. Seven cases had been treated with satisfactory results up to date. An apparently complete cure took place in all of them within a period of from three weeks to three months. I do not claim that phosphorus is a specific for leishmaniasis. I merely suggest that it should be tried on a large scale to see whether it is really efficacious or not. I would suggest also that it might be tried on certain nonleishmanial conditions, such as granuloma inguinale, and ulcus tropicum and ulcerated tropical rhinoscleroma.

DISCUSSION

DR. W. W. STEPHENS, Liverpool: In Laveran's book on "Leishmaniasis," the treatments cover some pages, and that I regard as a fairly good evidence that none of them are specific. Whether we have any specific drugs I suppose is questionable; but, at any rate, they are not specific in the sense that we can be certain of "cure" of a fairly large percentage. We should, I think, bear in mind the point that tropical sore frequently cures itself, in from six months to one year. It is necessary to determine whether phosphorus ointment is any better than the numerous ointments we have at the present time.

DR. JAMES CRAN, Belize, British Honduras: In the case of a very large oriental sore which covered almost the whole of the back of the wrist and cheek and part of the hand, I did a thorough scraping of the sore under local anesthesia, and applied potassium hydroxid. The sore healed up in two or three weeks. I have also had good results with other cases.

Causation of Cancer

SIR W. ARBUTHNOT LANE, London: Cancer is the result of chronic poisoning of the tissues of the body, and in the vast majority of cases by the poisons absorbed from the gastro-intestinal tract. The same degeneration of the tissues may be produced by the very prolonged action of roentgen rays and chemical poisons. Syphilis also effects a degenerative influence on all the tissues of the body, and so materially assists in the development of cancer. Stasis plays a very important part in the manifestations of syphilis and should also be taken account of in its treatment. Our only hope of preventing cancer is by obviating the development of chronic intestinal stasis and of all its manifestations and results. Cancer is only one of the consequences of stasis, but it is infinitely the most incurable and fatal. The prevention of cancer can be brought about only by a complete revolution in our diets and habits.

DISCUSSION

SIR THOMAS OLIVER, Newcastle-on-Tyne: I have not the least doubt that there has been an increase in cancer, and as this has occurred in the gastro-intestinal canal, that food and irritation have a great deal to do with it. Lane emphasized the points that the causes were irritation and absorption, which is borne out by experiments.

DR. HIDEYO NOGUCHI, New York: A part of Lane's idea has already received a concrete experimental demonstration in the hands of Yamagiwa and Ichikawa, who, in 1914, showed that a cancer can be produced artificially in rabbits by painting the inner surface of the ear with a coal tar preparation for a period of one year or longer. The cancer thus produced is comparable histologically to a genuine carcinoma. I cannot see any reason why various injurious substances and local irritations due to abnormal alimentation cannot likewise produce cancers in the human body, which is undoubtedly far more susceptible to the influence of these noxious substances than average animals.

SIR JAMES FOWLER, London: The extreme rarity of cancer in the small intestine is possibly due to the fact that there the condition of the contents appears to be less irritating than elsewhere. It is very difficult to overemphasize the importance of local irritation. Cancer is uncontrolled cell activity. When we know more of the cause of that cell activity and how throughout the body it is coordinated in such a way as to produce what we call health, then we may know more of the origin of cancer.

Bismuth in Treatment of Yaws (Frambesia Tropica)

DR. A. R. PATERSON, Dumbartonshire, Scotland: Potassium and sodium bismuth tartrate has been used in Kenya, Africa, since about January, 1923, and during that time has been the only drug used in the routine treatment of yaws. In two districts alone more than 36,000 cases were treated with this preparation during 1923. The dose for an adult is 3 grains (0.2 gm.), given intramuscularly in 2 c.c. of distilled water. For infants and for old people a smaller dose is used. It is given intramuscularly into the buttocks. Abscess formation has been exceedingly rare. The only precaution necessary is to be careful that the dose of 3 grains is never exceeded, and that a suitable reduction is made in the case of children and old people. Any excess may be followed by toxic effects, the most notable of which is a stomatitis, which may on occasion be exceptionally severe. The results from its use are excellent and in no way inferior to those previously obtained with arsenic preparations.

DISCUSSION

DR. H. J. NICHOLS, Washington, D. C.: It is much easier to cure yaws than syphilis. A little further animal experi-

mentation with bismuth might lead to a clearer understanding of its action. It would be very nice to know whether these patients are cured or not. Clinically speaking, they are cured; spirochetically speaking, they will be cured when the last spirochete is dead.

DR. E. W. WILSON: With a population of 2,500,000 in Haiti, one can readily appreciate what a yaws campaign will mean, both from the standpoint of the Haitian countryman and that of the government that has to pay the bill. I believe that the administration of bismuth salts in our yaws campaign in Haiti will solve a problem which has been practically insurmountable up to the present time.

DR. ALDO CASTELLANI, London: Dr. Nichols was the first to treat experimental yaws with arsphenamin; independently, Strong in the Philippine Islands and I in Ceylon, administered arsphenamin in human cases of yaws and obtained very good results. Later we used neo-arsphenamin. These drugs give wonderful results. After two or three injections, all the symptoms disappear; but in a certain number of cases the cure is purely a clinical one. The infection remains latent and sooner or later will flare up again. As regards the bismuth treatment advocated by Dr. Paterson, I am in favor of it. I think that bismuth should supplant arsphenamin and neo-arsphenamin. While it is equally efficacious, it is cheaper and is given intramuscularly. In cases in which for various reasons injections cannot be given, I recommended a mixture I devised some years ago. The formula is: antimony and potassium tartrate, 1 grain (0.065 gm.); potassium iodid, 1 dram (4 gm.); sodium salicylate, 10 grains (0.65 gm.); sodium bicarbonate, 15 grains (1 gm.); water, 1 ounce (30 c.c.). An ounce is given three times a day, diluted with three times as much water. This mixture, pharmacologically speaking, is very inelegant and often contains a precipitate. The addition of an ounce of glycerin and an ounce of syrup will keep it clear and prevent the formation of the precipitate. The active drugs in the mixture are the potassium iodid and the antimony and potassium tartrate. The sodium salicylate does not influence the yaws lesions in the least, but seems to hasten the disappearance of the thick crusts. The sodium bicarbonate tends to prevent the symptoms of iodism, and decreases the emetic properties of the mixture, in this way rendering possible the administration of massive doses of potassium iodid and large doses of antimony and potassium tartrate.

DR. A. R. PATERSON, Dumbartonshire, Scotland: We do not yet know the number of doses of bismuth that may be required to effect a cure. We have at present practically no information on that point, as the disease is one in which recrudescence in the untreated is a not uncommon occurrence, it will be some years yet before an opinion of any value can be expressed. The point of importance is that potassium and sodium bismuth tartrate is not only cheap but causes the rapid disappearance of distressing and disabling conditions and almost certainly renders the patient much less infective.

Tropical Diseases in Argentina

PROFESSOR MÜHLENS, Hamburg-Buenos Aires: The northern provinces of Argentina are markedly infested with malaria. Estivo-autumnal and quartan forms are more numerous than was previously assumed. Estivo-autumnal forms are found in a high percentage up to an altitude of 1,200 meters. *Microfilaria* infection is also more extensively distributed than has been known to be the case up to the present. New foci have been found not only in the province of Tukuman, but also in the provinces of Salta and Jujuy, in 48 per cent. of the examined population. The adult worm and the carrier could not be established. According to Rosenbusch, it is most closely related to *M. dermarquayi*. In northern Argentina we could find *Schizotrypanum cruzi* in two children with the thick film method. Also, animal infection was successful by the bite of *Triatoma* obtained from the hut of the first case, and by the injection of blood from the second one. Concerning pathogenicity of these trypanosome infections, occurring apparently so rarely in Argentina, further investigations are necessary. Cutaneous leishmaniasis sometimes occurs, and we saw some cases of espundia introduced from Bolivia. Mal de caderas occurs in the Gran Chaco in large numbers. Typhus occurs in the higher parts of the province of Salta. Syphilis and other venereal diseases, as well as ancylostomiasis, tuberculosis and alcoholism are widespread. Cases of yaws were not seen, but some cases of granuloma venereum were seen. Lepra and plague occur in some regions, especially in the Chaco. Typhoid and paratyphoid infections are not rare, and amebic dysentery is also found frequently in some regions.

DISCUSSION

DR. CHARLES C. BASS, New Orleans: All of us must be impressed with the fact that this and much other evidence obtained from similar surveys indicates that malaria is a disease of vast importance throughout the world. Experience shows that the findings on a first survey do not represent more than perhaps about 50 per cent. of the total of all infected. Therefore, in the people where Professor Mühlens was working in Argentina, perhaps 75 per cent. have malaria during the year and no doubt suffer more or less from it. I wish to ask Professor Mühlens what his opinion is as to the significance of the splenomegaly in cases in which he does not find malaria parasites. Does he believe that this is the result of previous malaria or does he think it is due to some other disease. My impression is that such cases improve and the spleen comes down on malaria treatment; but some of the cases do not yield in the same way that other large spleens, accompanied by a large number of parasites, do.

DR. H. J. NICHOLS, Washington, D. C.: It is evident that there are a great many infections in this country. The use of the thick film method apparently should be extended. Many of us use it only occasionally. The appearance of these new cases of trypanosomiasis suggests probably that it may be as widespread in this country as in Brazil, and the suggestion that filaria is imported from Bolivia is interesting.

DR. HIDEYO NOGUCHI, New York: An instance of human trypanosomiasis in northern Peru, detected by means of culture, may be of interest. In the summer of 1920, cultures were made by Drs. Kligler and Caballero from five cases of yellow fever that occurred at Morropon, a town near the foot of the Andean range in northern Peru. In one of the culture tubes inoculated with the blood of one of the patients, I was able to detect the growth of a flagellate, undoubtedly the cultural form of a trypanosome, simultaneously with *Leptospira icteroides*. In this medium (so-called *Leptospira* medium) the flagellate remained viable for many weeks at room temperature. From this observation it seems that in a survey like that undertaken by Professor Mühlens the use of such mediums might facilitate the finding of the infection in a higher percentage of cases.

DR. FRIEDRICH FÜLLEBORN, Hamburg: *Schizotrypanum cruzi* was found by Dr. Segovia in Salvador in human blood, and the parasite may occur also in other parts of Central America, for example, in Guatemala.

PROFESSOR MÜHLENS, Hamburg-Buenos Aires: I think that the splenomegaly found in so many cases without parasites is mostly due to past or persistent latent malarial infections; notwithstanding there is no doubt that many cases of splenomegaly can be produced by other diseases, especially by syphilis, which plays an important rôle in the northern parts of Argentina. The communication of Dr. Noguchi about the occasional finding of trypanosomes in Peru by cultures made for yellow fever studies is very interesting. We in Argentina intend to make blood cultures and also animal infections, and I am sure that we shall find more cases of human trypanosome infections in this way.

Systemic Infections by Endameba Dysenteriae

DRS. CHARLES A. KOFOID, LUTHER M. BOYERS, and OLIVE SWEZY, Berkeley, Calif.: The literature of human amebiasis contains numerous references to the occurrence of organ infection by *Endameba dysenteriae* beyond the limits of the colon and the immediately adjacent parts of the small intestine of man. There are also indications of the association of amebic infection with certain types of iritis. We have found

it in the bone marrow in arthritis deformans of Ely's second type, in the lymph glands in Hodgkin's disease and in skin ulcer. These reported occurrences are of sufficient gravity to raise the question in the minds of pathologists and students of the organism, not only as to the correctness of the amebic interpretation and of the species of amebas identified in the tissue invasions in some of these instances, but also as to the extent to which the ameba has the capacity of invading organs and tissues, and the frequency with which such invasions may occur in following infection of the colon. Our studies tend more and more toward the conclusion that amebiasis of the colon leads in some unknown degree to a systemic distribution of amebas by the blood stream with accompanying localizations of pathologic conditions in one or another organ or tissue and rarely in a more generalized pathologic state throughout the body as a whole, especially in cases that culminate fatally when a number of organs may be involved. One finds many instances of blood vessels in which amebas are present in quantity, and repeatedly, without any local evidence of lesions in their walls. In certain instances of tissue from liver abscesses we have been able to find amebas in the smaller capillaries, in undisturbed liver tissue, as well as in blood vessels in the margins of regions of tissue disintegration in the wall of the abscess. These observations are indicative of the capacity of this parasite to get into the circulating blood and to travel some distance from the immediate territory of the lesions. We had noted for several years in the course of our routine examinations of persons infected with *Endameba dysenteriae* that there was a surprising number of instances in which symptoms of arthritis were reported coincident with this infection. In the course of more than 35,000 examinations of more than 12,000 people we have found a very considerable number of coincidences of amebiasis and arthritis deformans, and these rheumatic symptoms and exostoses are reduced and in some instances disappear on treatment for amebiasis. Nineteen cases of Hodgkin's disease diagnosed by competent pathologists and clinicians have been examined by us for amebiasis. *Endameba dysenteriae* has been found in the stools in eighteen cases. In a serious case of amebic liver abscess which had received surgical treatment, erythematous spots appeared on the limbs and a margin of like appearance around the region of incision. These spots enlarged until they reached in some cases a diameter of 20 mm. Each spot was circular, and had a necrotic central area with a dark margin immediately around it and an erythematous ring outside this which paled into the normal skin. The case terminated fatally. The liver tissue exhibited the conditions typical of amebic liver abscess, and amebas were found in the tissue adjacent to the abscess. The clinical history and pathologic state of the tissues and the presence of the amebas confirm the diagnosis that this was a case of typical amebic abscess. Sections from small ulcers in the early stage of their emergence in the skin showed a disorganization of the tissues in the center of the area and an accumulation of pigment in the connective tissue cells about this center. Scattered sparingly through the central area and accumulated in large numbers in the margins of the greatest tissue disturbance were found cells that we interpret as amebas.

The fact that *Endameba dysenteriae* in the motile stage in cases of active amebic dysentery often gorges itself with red blood cells, and that it occurs in such numbers in capillaries of the smaller blood vessels of the colon, in peripheral areas around ulcers, both suggest that this organism has a positive chemotropism for erythrocytes, and possibly for the blood serum in which they are found. There is, it seems, some indication from the clinical examination of cases that there may be in man in cases of infection by *Endameba dysenteriae* some degree of tissue or organ acclimatization. Clinical suggestions of pathologic conditions in the iris and retina of the eye, in the thyroid, the occurrence of amebas in the testis, semen, spleen and skin ulcers afford additional evidence of generalized distribution of this parasitic organism. The picture as a whole is rather strongly indicative of an affinity on the part of this parasite for the mesenchyme and the organs formed therefrom, especially for the connective tissue regions such as the framework of the glands, and the tissue derivatives of the mesenchyme, such as the blood system, the bone marrow and the lymph glands.

DISCUSSION

DR. ALDO CASTELLANI, London: Amebiasis may attack any organ of the human body. Most of the conditions mentioned by Dr. Kofoid may be found in any modern textbook of tropical medicine. I should like to call attention to the so-called tropical liver, to "bronchial amebiasis" and to "amebic fever." Sir Leonard Rogers and I independently pointed out some time ago that the so-called tropical liver is in reality a form of amebiasis. Chalmers and I, some years ago, called attention to cases of bronchitis after dysentery and hepatitis, in which the administration of ipecac was extremely useful. In cases of what I call amebic fever, the only symptom that the patient presents is fever, the examination of all organs and system being negative, and this is apt to be mistaken for malaria. There is only one drug that will cure this type of fever, and this is emetin.

Tropical Dermatology

DR. ALDO CASTELLANI, London: Tropical skin diseases may be classified as follows: A. Due to vegetable organisms: (1) bacteria; (2) fungi. B. Due to animal organisms: (1) protozoa; (2) metazoa. C. Due to physical and chemical causes. D. Of unknown or doubtful origin. Some of the less known skin diseases are: aspergillosis and perucelliosis of the beard; trichomycosis axellaris flava, rubra and nigra; cryptococosis epidermica; tinca flava; tinca nigra; dermatitis outerdigitalis and dhobie itch; tinca imbricata, and pruritus ani of mycotic origin.

DISCUSSION

DR. ROLAND C. CONNOR, Panama: There is a practical point in the prevention of tinea cruris and some of the common forms of dhobie itch that I discovered by chance on my own self in 1907. We were using salicylic acid and alcohol and later on Dr. Deek's dhobie itch ointment, a mercury, salicylic acid and oil of eucalyptus mixture. I found that the tinea cruris affection frequently relapsed after an apparent cure. It occurred to me that an excessive acid perspiration was conducive to the growth of this fungus, so I began the use of an alkaline powder, after bathing, when I had apparently cured the infection. I put a tablespoonful of sodium bicarbonate in about 8 ounces of perfumed talcum powder, mixed thoroughly, and used it. I have never had a recurrence of tinea cruris. I always recommend the use of the preparation to my patients after they have been treated and cured of the affection. The same applies to common tinea infections between the toes and on the feet, where the affection is often rebellious to treatment. Many years ago I took a hint from Dr. Deeks, who prescribed his dhobie itch ointment in a case of pruritus ani, with great relief to the patient, and I have many times had the opportunity of noting the relief that this remedy gave in such cases, in which none of the common causes of the trouble could be found. Only a small bit need be used, and should be applied once or twice a day on the tip of the finger and rubbed in well about the anal orifice. No doubt, the relief experienced in these cases was due to its parasiticidal effect on the fungus described by Dr. Castellani as causing pruritus ani.

DR. ALDO CASTELLANI, London: I was much interested in what Dr. Connor said about the relapses of dhobie itch. This has been the experience of all of us, and I certainly think that his powder should be used generally. As regards pruritus ani, I am interested to hear that the dhobie itch ointment suggested by Dr. Deeks gives good results in many cases of this condition, because it is really in favor of my theory that a certain percentage of such cases are of mycotic origin.

Pinta or Carate

DR. EDUARDO URUETA, Santa Marta, Colombia: The disease which Unna termed pinta cerulea is named in Colombia and Venezuela carate, in Mexico tiña, being more widely known in the medical world by the name of pinta. This is a group of tropical dermatomycosis caused by various species of fungi of the genus *Aspergillus, Penicillium, Monilia, Montoyella,* and similar forms that live and grow in the super-

ficial coats of the skin, where they produce variously pigmented patches strongly contrasting with the surrounding uncontaminated epidermis. The disease seems to have existed since times remote, as the history of the Aztecs mentions it, but, only from the eighteenth century it appears in the medical writings, Polanco in Mexico being one of the first who mentioned and described it (1760), and later on Juan de Valazco in Colombia (1780). However, it was the French Alibert who in 1829 made a more elaborate study of the disease, describing it by the name of "tache epidémique de las cordillers." Gastambide discovered the fungus that causes the disease, in 1881. More recently the investigations and publications of Montoya y Flores, a Colombian, have made the disease and its fungi still better known. It is geographically distributed in Tropical America, including Mexico, Central America, Colombia, Venezuela, Peru, Chile and Brazil, being limited in each of these countries to certain sections, while outside these, the disease does not exist. Heat and humidity are the conditions required for the life and growth of the parasite. Insects that are bred in stagnant water in places where the disease is endemic are thought to be the ones that inoculate the spores of the fungus, especially the sand fly. My personal experience induces me to believe that the rôle of these bugs is doubtful, as I have seen white foreigners and well-to-do natives remain immune though they have been exposed for many years to the bite of these insects, at the worst sections of the country. It is therefore more likely that the slovenliness and the hard work among the manual laborers play the more important rôle in contracting pinta. The diagnosis is easily made in places where the disease is endemic. In places where the disease is not endemic, the diagnosis of pinta will give place to doubts, when it will be necessary to resort to a microscopic examination of the scrapings of the patches. My personal experience with treatment leads me to favor chrysarobin. It is as efficacious for pinta as for ringworm. After removing all the crusts from the affected skin by the ordinary measures, I apply over the lesions with a camel's hair brush this preparation: chrysarobin, 5 gm.; gutta-percha, 5 gm.; chloroform, 30 c.c. If the local reaction is too strong, I decrease the proportion of chrysarobin. This varnish should be renewed daily, new coats being applied over the preceding coats, unless this medical dressing gets soiled, in which case it will be necessary to remove it with benzene, to be freshly applied again.

DISCUSSION

DR. JAMES CRAN, Belize, British Honduras: Pinta is a very common disease among the Caribs. It is much more common among the women than among men, and I think this is because the women are the agricultural laborers and the men the fishermen. The commonest site for the disease among women is on the hands and feet. It begins as the dark blue or black variety, and finishes up as the white variety. It is very seldom that we get an opportunity to treat it because it is so common that they cannot throw stones at one another and the disease causes them no inconvenience. Occasionally they will come and ask to be cured, but all that we can do is to stop the spread of the disease, and when they find that we cannot get rid of the spots they give it up in disgust. Several years ago, a physician inoculated himself on the forearm with this disease by means of scrapings. I do not remember the incubation period, but it was short. He cured himself with chrysarobin. I have lately tried the treatment recommended by Dr. Castellani, with considerable success.

DR. EDUARDO URUETA, Santa Marta, Colombia: My paper is principally concerned with the treatment, urging the use of chrysarobin, applied as a varnish, in place of the usual antifungus medicines, such as salicylic acid, resorcinol, iodin and mercury, and also for the tattooing with sepia of the so far incurable white patches of the last stage. A cure for these white patches is of the keenest interest, as these unsightly markings are the most humiliating part of the disease for the wealthy native planters and their families. I shall be satisfied if this talk on pinta stimulates investigation toward this end. In Santa Marta there is a rich field for such research.

(To be continued)

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL for a period of three days. No foreign journals are available prior to 1920, nor domestic prior to 1923. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested).

Titles marked with an asterisk (*) are abstracted below.

American Journal of Diseases of Children, Chicago

9: 265-406 (Sept.) 1924

*Mental Health Problems in School Children. F. G. Ebaugh, Philadelphia.—p. 265.
*Stair Climbing as Test of Cardiac Function. J. H. Wallace, Oak Park, Ill.—p. 282.
Tarsal Scaphoiditis: Case. L. C. Schroeder, New York.—p. 293.
*Case of Hemolytic Jaundice. F. H. Bartlett and M. Wollstein, New York.—p. 301.
*Intravenous Use of Mercurochrome-220 Soluble in Pneumonia in Children. W. T. Freeman and L. D. Hoppe, Atlanta, Ga.—p. 310.
*Roentgen-Ray Treatment of Whooping Cough. H. L. Bowditch, R. D. Leonard and L. W. Smith, Boston.—p. 322.
*Effect of Cod Liver Oil on Development of Rickets in Breast-Fed Infants. L. R. DeBuys and L. von Meysenbug, New Orleans.—p. 329.
Résumé of Literature on Measles During 1922-1923. E. B. Perry, Chicago.—p. 344.

Mental Health Problem in School Children.—A study made by Ebaugh of fifty unselected cases referred by teachers of regular schools have been summarized from the standpoint of physical, mental, psychometric and environmental findings. Corrective modifications have been suggested and the therapeutic results after a period of at least one year discussed. The school should be considered as the children's health center of the district. This means care for their mental as well as their physical well-being. School clinics, operating in close cooperation with the mental clinics of the district, and children's observation wards in the general hospitals will all be needed in meeting this important public health problem. The maladjustment of the child of today has a definite connection with the abnormal mental reactions or actual psychoses of the adult of tomorrow. The principles of preventive psychiatry, therefore, demand the early treatment of maladjustment in its incipience, when proper steps may be instituted to establish social adaptation at the person's highest level of efficiency.

Stair Climbing as Test of Cardiac Function.—Ten children recommended, on the basis of history and physical examination, as having chronic heart disease with slightly diminished exercise tolerance performed the activities of normal childhood easily and without evident physical detriment. Rather strenuous stair climbing was performed by this group easily and without evidence of cardiac embarrassment. A study made by Wallace of the blood pressure reaction changes after a given piece of work revealed that in children with mild heart disease the reaction time is usually longer than in children with normal hearts, and that it is longer still in children with more severely damaged hearts, especially in cases of mitral stenosis. The blood pressure and pulse rate reaction times following a given work test were recorded before the beginning of a period of supervised rest, play and work, and again from three to four weeks later. Although the subjects showed obvious general improvement, a comparison of the two sets of reaction periods showed a tendency toward increasing, rather than decreasing, blood pressure and pulse rate reaction periods.

Splenectomy in Hemolytic Jaundice.—A splenectomy was performed in the case cited by Bartlett and Wollstein. Two supernumerary spleens were found. One was removed for examination. The other, about 6 by 3 cm. in size, was left. The rapid disappearance of the jaundice in this case was one of the startling events following the operation. Within twenty-four hours the boy's skin and sclerae had returned almost to normal color. Three days after the operation the jaundice had entirely gone. The blood examination made fifty-one days after the operation showed an increase in the white blood cells to 42,000. The polymorphonuclear cells were only 6.5 per cent., the lymphocytes were 84 per cent.

Mercurochrome in Pneumonia.—Freeman and Hoppe report twelve cases of pneumonia occurring in infants and children in which treatment consisted of the intravenous injection of mercurochrome-220 soluble, and the results of animal experimentation. They report that following the injection of mercurochrome, the fluid squeezed from the lungs inhibits the growth of bacteria. Of the twelve cases of pneumonia, seven were cases of bronchopneumonia and five were lobar in type. Two patients died. In one case death was inevitable before the drug was given. The other child, with cyanosis of unknown origin existing for several years, showed definite improvement at first but later failed to respond to treatment. In seven cases one injection was all that was required. Three cases required two injections, and two cases required three injections. The average dose was 0.005 gm. per kilogram of body weight, using a 1 per cent. solution. The authors call attention to the fact that a very marked clinical improvement usually occurs a few hours after the injection, and that this improvement sometimes occurs without any marked change in the temperature or pulse rate. It was noted that these cases of pneumonia treated with mercurochrome ran a much shorter course than cases of pneumonia of the same severity in which this drug was not used. The systemic reaction is mild in children.

Roentgen-Ray Treatment of Whooping Cough.—Methods of treatment of whooping cough are summarized by Bowditch et al. as follows: In exposed cases, the use of pertussis vaccine may be considered as probably from 85 to 90 per cent. efficient in preventing the disease. In active cases, the use of the roentgen ray, supplemented by diathermy and medication as indicated, particularly in those cases complicated by bronchopneumonia, is a valuable weapon in the treatment of the disease.

Effect of Cod Liver Oil on Development of Rickets in Breast Fed Infants.—Considering rickets from the clinical symptoms ascribed to it, which occur within the first year of life and which formed the basis of the study made by DeBuys and von Meysenbug, the disease was more marked during the period of this study when cod liver oil was given than during the period of the previous study. It may be that the amount of cod liver oil was insufficient as a preventive, or that it was greatly deficient in the essential antirachitic factors, or that the adverse meteorologic phenomena were such as to offset the beneficial effects of the cod liver oil, or that the clinical symptoms ascribed to rickets may not be due exclusively to rickets, or that there may very likely be some other influencing factor or factors. Considering rickets from the clinical symptoms of enlarged epiphyses and costal beading, the disease was beneficially influenced by the routine administration of cod liver oil, in spite of the adverse meteorologic condition. Considered from all the clinical symptoms, sunshine and precipitation seemed to have their influence on the severity of the rickets, even in the presence of the administration of cod liver oil.

American Journal of Ophthalmology, Chicago

7: 669-748 (Sept.) 1924

Dermoid Tumor of Cornea Conjunctiva Associated with Scleral Ectasia F. P. Calhoun, Atlanta, Ga.—p. 669.
Tuberculosis of Cornea Sclera. C. H. Chou, Changsha, China.—p. 670.
Pathogenesis of Vossius Ring Cataract. W. Zentmayer, Philadelphia. p. 676.
Congenital Anomalies of Lens Seen with Slit Lamp. S. R. Gifford, Omaha.—p. 678.
Ocular Symptoms of Disturbed Cerebral Circulation. S. G. Dabney, Louisville, Ky.—p. 685.
Refraction. P. N. K. Schwenk, Philadelphia.—p. 689.
Campimeter Recording and Plotting Chart. J. N. Evans, Brooklyn. p. 691.
Organization of Ophthalmology Department in Hospital. E. Hill, Richmond, Va.—p. 696.
Relation of Weakness of Extra-Ocular Muscles and Depth Perception. W. F. Bonner, Wilmington, Del.—p. 699.
Primary Syphilitic Lesion of Upper Lid. N. Fox and S. Machlis, Chicago.—p. 701.
Cilium Through Iris Without Symptoms. R. A. Hughes, Moncton, N. B.—p. 702.
Nonshatterable Glass. H. Friedenwald, Baltimore.—p. 702.
Congenital Dermoid Cyst of Cornea with Dermolipoma. I. M. Miller, Yakima, Wash.—p. 703.
Occupational Abducens Paresis. C. E. Ide, Long Beach, Calif.—p. 704.
Mesentery Thrombosis and Death After Cataract Extraction. A. C. Jones and C. P. Clark, Boise, Idaho.—p. 704.

American Journal of Psychiatry, Baltimore

4: 1-160 (July) 1924

Psychiatry and Public Health. L. F. Barker, Baltimore.—p. 13.
*Biochemical Study of Blood in Mental Disorders. J. M. Looney, Towson.—p. 29.
*Sexual Behavior and Secondary Sexual Hair in Female Patients with Manic-Depressive Psychoses; Relation of These Factors to Dementia Praecox. C. E. Gibbs, Ward's Island, N. Y.—p. 41.
Case of Manic-Depressive Reaction with Psychic Impotence. O. H. Boltz, Ward's Island, N. Y.—p. 57.
Schizophrenia. H. S. Sullivan, Baltimore.—p. 77.
Case of Benign Stupor Showing Unusual Ideational Content. L. D. Hubbard, Washington, D. C.—p. 93.
Heredity. G. W. T. Mills, Central Islip, N. Y.—p. 103.
Chapter from Evolution of Medical Administration. W. L. Russell, White Plains, N. Y.—p. 125.
Relation of Absence of Sentiments as Outlined by Shand to Some Cases Labeled Psychopathic Personality. S. N. Clark, Jacksonville, Ill.—p. 135.

Blood in Mental Disorders.—Looney's findings show that there is no essential change from the figures given by the controls in the various nitrogenous constituents of the blood taken from hysterical psychoneurotic, manic or paranoid cases that can be determined by careful examination. In the depressed groups represented by the manic depressive depressions, the simple and deteriorating praecox cases and in the involution melancholias there is an appreciable increase in the per cent. of undetermined nitrogen. In the last two of these groups there is also a decrease in the per cent. of creatin nitrogen. These results would appear to offer some support for the view that toxic amines may be present in the circulation of markedly depressed patients.

Sexual Behavior of Psychotics.—Gibbs states that in female patients with psychotic reactions having certain benign aspects, usually resembling manic excitement, a history of inadequate or peculiar sexual behavior, and often of illicit intercourse, together with early onset of the psychosis and the presence of masculine hair, indicates a malignant process and unfavorable outcome. Many such patients fail to recover from the first or second attack and follow a malignant course which cannot be differentiated from dementia praecox. Others follow an atypical course, with prolonged attacks and final chronicity, without very marked deterioration. Three illustrative cases are reported.

Heredity.—Only two of the eighteen cases cited by Mills fit at all with mendelian laws. He is convinced that the statements made regarding psychoses, etc., behaving as recessive traits are not founded on any facts so far established.

American Journal of Roentgenology and Radium Therapy, New York

12: 97-208 (Aug.) 1924

Biologic Aspects of Radiation Therapy of Cancer. C. Regaud, Paris, France.—p. 97.
*Phagocytosis After Intensive Roentgen-Ray Irradiation in Primary Abdominal Lymphosarcoma. A. S. Warthin, Ann Arbor, and J. T. Case, Battle Creek, Mich.—p. 102.
Ionization Measurements of Roentgen-Ray Intensity. J. L. Weatherwax and E. T. Leddy, Philadelphia.—p. 110.
*Roentgen-Ray in Treatment of Giant-Cell Tumors. R. E. Herendeen, New York.—p. 117.
*Radiation Therapy of Leukemias. Twenty-Five Cases. B. F. Schreiner and W. L. Mattick, Buffalo.—p. 126.
Radiation Therapy in Forty-Six Cases of Lymphogranuloma. B. F. Schreiner and W. L. Mattick, Buffalo.—p. 133.
Roentgen-Ray Therapy of Sinus and Intracranial New Growths. L. A. Smith, Indianapolis.—p. 138.
Normal and Pathologic Anatomy of Sella Turcica as Revealed by Roentgenograms. J. D. Camp, Rochester, Minn.—p. 143.
Necessity of Close Cooperation Between Roentgenologist and Urologist in Diagnosis of Double Kidney. R. C. Beeler and H. O. Mertz, Indianapolis.—p. 157.
*Rôle of Ligamentous Calcification in Lower Back Pain. H. P. Doub, Detroit.—p. 168.
Differential Diagnosis of Enlarged Heart and Pericarditis with Effusion. C. W. Perkins and B. Lattin, New York.—p. 171.

Phagocytosis After Intensive Roentgen-Ray Irradiation.—In a case of atypical Addison's pigmentation associated with primary aleukemic lymphocytoma (lymphosarcoma) of the retroperitoneal lymph nodes involving the solar plexus and suprarenals, with death occurring shortly after deep-seated, intensive, roentgen-ray therapy, Warthin and Case found, on microscopic study of the necropsy material, a degree of phagocytosis of nuclear chromatin by the entire reticulo-

endothelial apparatus previously unrecorded in the literature. There were marked degeneration and necrosis of the atypical lymphoid tissue of the neoplastic nodes, with a flooding of the circulation with the products of such nuclear destruction, and the phagocytosis of the chromatin detritus in the circulation by the reticulo-endothelial cells of the body, especially the Kupffer cells of the liver. This phagocytosis of nuclear material was as marked as the phagocytosis of blood pigment by these cells in severe hemolytic conditions.

Roentgenotherapy of Giant Cell Tumors.—This article by Herendeen, the first of the series dealing with the roentgen-ray treatment of bone tumors, records the changes noted in giant cell tumors following treatment with the roentgen ray or radium, and compares briefly, the value of these agents with the standard surgical methods of treatment. Herendeen says that treatment by radiation obviates, in many cases, the loss of the limb by amputation, produces growth restraint, firm encapsulation of the tumor, and relief of pain in the majority of cases. A more rapid ossification is brought about, with a more rapid restoration of function than when some surgical procedure is the method of treatment. Treatment by radiation is followed by a reaction evidenced clinically and roentgenologically, simulating rapid growth of the tumor. Pain and tenderness diminish as the reaction subsides, ossification takes place and function returns.

Radiotherapy of Leukemia.—An analysis of twenty-five cases of leukemia in which either the roentgen ray or radium were employed convinces Schreiner and Mattick that radiation therapy combined with the proper medical treatment offers the best chance of prolongation of life and palliation, with the least inconvenience to the patient. However, neither radiation therapy nor any other therapy has ever effected a cure in a case of Hodgkin's granuloma.

Ligamentous Calcification Causes Back Pain.—Doub reports the findings in a group of cases presenting calcification of the iliolumbar ligaments. He believes that this condition explains the cause of this pain in a certain number of cases.

Annals of Otology, Rhinology and Laryngology, St. Louis

33: 657-1008 (Sept.) 1924

Pathology of Tonsil. J. E. Davis, Detroit.—p. 657.
Primary Adenocarcinoma of Middle Ear and Mastoid. A. C. Furstenberg, Ann Arbor, Mich.—p. 677.
Pathologic Changes in Membrana Tympani: Classification. H. Hays, New York.—p. 690.
Diagnosis of Paranasal Cell Disease. J. D. Heitger, Louisville, Ky. p. 712.
Drainage in Treatment of Frontal Sinusitis. S. E. Roberts, Kansas City, Kan.—p. 735.
System of Exact Olfactometry. A. W. Proetz, St. Louis.—p. 746.
Malignant Infection of Nose: Case. R. F. Ridpath, Philadelphia. —p. 764.
Foreign Bodies in Paranasal Sinuses: Cases. R. Levy and J. H. Leyda, Denver.—p. 772.
Laryngotracheobronchitis. H. L. Baum, Denver.—p. 782.
Parotitis Complicating Acute Otitis Media. A. T. Wanamaker, Seattle. —p. 790.
Analytic Study of Nasal Form. C. E. Pitkin, Cleveland.—p. 800.
Mechanism and Treatment of Rhinorrhea and Sneezing. L. Hubert, New York.—p. 824.
Symptomatic Treatment of Laryngeal Tuberculosis. M. D. Brown, Denver.—p. 844.
Case of Cerebellopontine Angle Tumor: Necropsy. F. L. Dennis, Colorado Springs, Colo.—p. 862.
Chronic Progressive Deafness. F. P. Emerson, Boston.—p. 865.
Pneumatocele and Pyocele of Sacculus Ventriculi Laryngis. F. B. Kistner, Portland, Ore.—p. 891.
Deficiency Diseases. A. H. Smith, New Haven, Conn.—p. 898.
Artificial Respiration and Restoration of Breathing. Y. Henderson, New Haven, Conn.—p. 906.
Diagnosis of Syphilitic Diseases of Internal Ear. D. N. Husik and D. Nussbaum, Philadelphia.—p. 909.
Sugar in Treatment of Ozenal Rhinitis. C. B. Younger, Chicago. p. 914.
Otologic Study of Streptococcus. H. Boyd-Snee, South Bend, Ind. p. 929.
Rhinopharynx as Site of Focal Infection. M. Solis-Cohen, Philadelphia.—p. 935.
Treatment of Pulmonary Suppurations and Bronchial Asthma. W. F. Moore and R. M. Lukens, Philadelphia.—p. 956.
Tonsillar Pathology in Relation to Systemic Infection. G. B. Wood and E. A. Case, Philadelphia.—p. 958.
Roentgen Rays in Study of Mastoid Disease. G. E. Pfahler, Philadelphia.—p. 960.
Id. M. S. Ersner, Philadelphia.—p. 962.

Boston Medical and Surgical Journal

191: 471-520 (Sept. 11) 1924

*Carcinoma of Colon. D. F. Jones and E. P. Hayden, Boston.—p. 471.
Glaucoma. G. A. Moore, Palmer, Mass.—p. 476.
*Diagnosis of Acute Osteomyelitis by Roentgen Rays. F. W. O'Brien, Boston.—p. 484.
State Hospital Pathologist. O. F. Kelly, Danvers, Mass.—p. 488.
Chronic Trional Poisoning: Fatal Case. C. Loitman, Boston.—p. 491.
Artificial Insemination in Treatment of Sterility. S. R. Meaker, Boston.—p. 495.
Meralgia Paresthetica. H. R. Viets, Boston.—p. 497.
Fracture of Ribs by Muscular Action. F. W. Palfrey, Boston.—p. 498
Progress in Psychiatry. I. H. Coriat, Boston.—p. 499.

Carcinoma of Colon.—Jones and Hayden analyze sixty-six cases. Thirty-three resections were done with a mortality of 18 per cent.; twelve colostomies, with no mortality. Of the resection cases, twenty-one patients are living, fourteen of these, three or more years after operation. Five patients are living more than five years after operation.

Roentgen-Ray Diagnosis of Osteomyelitis.—O'Brien points out that demonstrable roentgen-ray findings of bone changes indicate an infectious process of long standing or rapidly growing bone tumor, and that no demonstrable bone changes in the roentgenogram is the rule in acute osteomyelitis.

Florida Medical Association Journal, Jacksonville

11: 33-56 (Aug.) 1924

*Splenectomy. J. S. Helms, Tampa.—p. 33.
*Hydatidiform Mole: Case. G. H. Edwards, Orlando.—p. 37.
Postoperative Treatment of Peptic Ulcer. H. A. Peyton, Jacksonville. —p. 40.
*Preeclamptic Toxemia of Pregnancy Complicated by Monstrosity. G. F. Oetjen, Jacksonville.—p. 42.
Temporary Hypertrophy of Pituitary Gland at Puberty with Symptoms of Cerebral Pressure. G. Osincup, Orlando.—p. 45.
Diet in Relation to Consistency of Tooth Structure. J. Williams, Jacksonville.—p. 48.
Our Responsibility in Gonorrheal Eye Infection. C. Washburn, Jacksonville.—p. 50.
Another Avenue of Violation of Harrison Act to Be Guarded Against. R. W. Blackmar and B. F. Woolsey, Jacksonville.—p. 52.

Splenectomy.—Eight splenectomies, two done for pernicious anemia, five for splenic anemia, and one for malignant disease are reported on by Helms. The operative mortality was 25 per cent. The two deaths occurred in cases of splenic anemia; one of the cases was very advanced with atrophic cirrhosis of the liver, with frequent and copious hematemesis; the other was an exceedingly large spleen almost completely filling the entire left abdomen, difficult to remove. Operation was followed by marked hyperpyrexia within the first twenty-four hours and death ensued.

Hydatidiform Mole.—In Edwards' case the mole was passed spontaneously at about what seemed to be the fourth month of pregnancy. This case departs from the type in several respects: There was no profuse or protracted hemorrhage. The uterus did not enlarge with undue rapidity, nor was it larger than it should have been for the time of pregnancy. The cervix was unusually soft instead of unusually firm. No unusual nausea, emaciation or discomfort was experienced. No cysts were observed to be passed.

Anencephalus with Spina Bifida.—The monster in Oetjen's case was an anencephalus, with bifid spine. The fetus was apparently one of about seven months' gestation. All the bones of the vault of the skull were missing, and the brain was rudimentary and could not be seen through its coverings. The spine was bifid in its entirety, and the cord could be seen in the groove between the bifid processes.

Indiana State Medical Association Journal, Ft. Wayne

17: 271-330 (Sept.) 1924

Treatment of Neoplastic Diseases by Combined Methods. W. L. Clark, Philadelphia.—p. 271.
*Closure of Chronic Empyema Cavities by Chemical Treatment. W. D. Gatch, Indianapolis.—p. 273.
Value of Basal Metabolism in Clinical Medicine. C. L. Seitz, Evansville.—p. 276.
Medical Profession and Indiana Workmen's Compensation Law. J. S. Taylor, Sullivan.—p. 283.

Chemotherapy of Empyema.—Of twenty-one cases of chronic empyema, Gatch has succeeded in closing seventeen by the use of the so-called chemical method (chlorazene solution, 2 to 5 per cent). Two patients have died, but

neither from causes in any way connected with the treatment. One patient with tuberculosis still has a small sinus, but is able to work and earn a living. One case required a small, and one a large thoracoplasty. The treatment employed has been demonstrated to be devoid of danger, and is easily carried out. The strong chlorinated solution rapidly sterilizes the cavity and destroys the thick walls of the same at a rate which is not too rapid for safety. It also opens up pockets of pus not draining freely into the main cavity. Bronchial fistulae will close practically always when the empyema cavity with which they communicate has been completely drained. Cavities infected with the tubercle bacillus cannot be irrigated with chlorinated solutions unless they have very thick walls. Aqueous solutions of gentian violet can be used to destroy gram-positive organisms in these cavities. The same, when free of pyogenic infections, may be closed without draining. This offers the only possible hope of cure. The dissolving action of chlorazene solution on the thickened pleura can be demonstrated in vitro. Roentgenograms of the chest before and after treatment demonstrate a complete disappearance of the thickened pleura.

Journal of Infectious Diseases, Chicago

35: 213-314 (Sept.) 1924

Gaseous Metabolism of Anaerobic Bacteria. XIX. Methods. B. G. Anderson, San Francisco.—p. 213.
Id. XX. Experimental Data. B. G. Anderson, San Francisco.—p. 244.
Formation of Acrolein from Glycerol by Bacillus Welchii. F. B. Humphreys, New York.—p. 282.
Bacillus Pestis in Blood, Bile and Urine. O. Ohoto, Osaka, Japan. p. 291.
*Precipitin Reactions of Serum Proteins. L. Hektoen and W. H. Welker, Chicago.—p. 295.
*Isolation of Bacillus Botulinus, Type B, from Feces by Use of Blood Agar Plates in Anaerobic Jar. M. W. Wheeler and E. M. Humphreys, Albany, N. Y.—p. 305.
*Food Accessory Factors (Vitamins) in Bacterial Growth. IX. R. C. Robertson, Chicago.—p. 311.

Precipitin Reactions of Serum Protein.—Hektoen and Welker report the results of their work on the precipitin reactions of the euglobulin, pseudoglobulin and albumin of beef, dog, horse and human blood serum. These proteins were obtained in as pure form as possible by a method described.

Isolation of Bacillus Botulinus from Feces.—Cases of botulism are reported in which bacteriologic evidence is lacking because specimens of the suspected food cannot be obtained. This report by Wheeler and Humphreys of the isolation of *Bacillus botulinus* from the feces in a typical case of botulism is therefore of value in helping to establish the diagnostic significance of such examinations. It is also of interest in demonstrating the superiority of the use of blood-agar plates incubated in an anaerobic jar as a method for isolation and purification of anaerobes. The presence of botulinus toxin, type B, was demonstrated in cultures inoculated with a specimen of feces from a typical case of botulism taken on the sixth day of the disease. Repeated attempts to isolate *B. botulinus* from the cultures in which toxin had been demonstrated by the use of deep agar-dilution cultures in dextrose-infusion agar were unsuccessful. A pure culture of *B. botulinus*, type B, was readily isolated from the cultures in which toxin had been demonstrated, by the use of 5 per cent. horse blood extract agar plates, incubated in a hydrogen-anaerobic jar.

Vitamins in Bacterial Growth.—The synthetic medium employed by Robertson in the experiments here reported permits the continued growth of several common varieties of bacteria, but other varieties, chiefly pathogenic, and also *Saccharomyces cerevisiae* soon died after a few transplants in this synthetic medium. After growing the several varieties through fifty generations in the synthetic medium, they were grown in a liter of this medium for ten days. The medium was then filtered, titrated, tubed, and autoclaved. On this medium, yeast then continued to grow through fifty generations.

Kentucky Medical Journal, Bowling Green

9: 307-362 (Sept.) 1924

Practical Pediatric Suggestions. R. J. Estill, Lexington.—p. 337.
*Subphrenic Abscess. R. M. Evans, Louisville, Ky.—p. 340.
Persistent Occiput Posterior. G. Fulton, Louisville.—p. 344.
Analgesia and Anesthesia in Obstetrics. W. B. Gossett, Louisville. —p. 347.
Tetany. V. E. Simpson, Louisville.—p. 354.
Metastatic Gonorrhea. E. R. Palmer, Louisville.—p. 359.
*Absence of Left Tube and Ovary. Anomalous Uterine Formation. L. Frank, Louisville.—p. 360.

Subphrenic Abscess.—Evans reports a case of this sort occurring in a child, aged 5 years. There was no history of tuberculosis, mental or nervous diseases or nephritis. The patient had no diseases of childhood; was never ill in his life until the age of 18 months, when he had round worms. Three months later he began to lose his teeth from suppurative gingivitis and finally, within a year, he lost all his teeth. At the age of 3, he had two large furuncles, one on the scalp and one on the chest in the sternal region, which healed in two or three weeks after incision. He was taken ill suddenly five or six days before admission to hospital with agonizing pain in the epigastrium, which was more or less continuous and unabated, with high fever and chilly sensations and profuse perspiration. There was no vomiting. The intestinal function was regular. There was no constipation nor diarrhea. The boy had multiple furuncles on the scalp, face and neck; but none on the body. There was little or no pus present at that time, and the lesions were apparently undergoing healing. Urinalysis was negative; eyes, ears, nose and throat were negative. There was exquisite tenderness and rigidity on light and deep palpation in the epigastrium to the left of the midline along the left costal margin for 3 inches below the costal margin. Otherwise the abdomen was soft and flaccid. There was no tenderness over the appendix on superficial or deep palpation, nor at any other point, save that mentioned. Deep and superficial reflexes, including pupillary, were normal. Pathologic reflexes were absent. At operation a subphrenic abscess was found to the left of the midline and to the left of the falciform ligament. It contained about 6 ounces of yellowish pus of the consistency and appearance of soft butter. The cavity was packed with a 1 inch strip of iodoform gauze and a large fenestrated tube was inserted. Within twenty-four hours the temperature was normal and remained so for the next two days. Culture of the pus showed a pure growth of *Staphylococcus aureus*. Within a few days there was a recrudescence of the furuncles, and in addition a crop of new ones appeared, one in the occipital region, burrowing downward under the scalp and forming a pus pocket which was incised and drained, 2 or 3 ounces of thick creamy pus escaping. This was on the tenth day after operation. Both scalp and abdominal incisions continued to drain profusely for several days, but under hot saline dressings they became fairly clean and drainage almost ceased. Four weeks after admission the patient was dismissed from hospital. Six months later the child died from multiple abscesses, general septicemia, exhaustion and inanition.

Absence of Tube and Ovary.—During an operation for appendicitis, Frank discovered the absence of the left tube and ovary. The uterus was displaced to the left side by a short left round ligament.

Medical Journal and Record, New York

120: 201-256 (Sept. 3) 1924

Northern Chronic Dysenteries. W. A. Bastedo, New York.—p. 201.
Prostheris in Middle Ear Deafness. W. S. Bryant, New York.—p. 205.
*Excess Blood Sugar in Connection with Certain Surgical Conditions. I. B. Bartle, North Bend, Ore.—p. 207.
*Is Tonsillitis Merely a Symptom? S. M. Wilson, Philadelphia.—p. 209.
Problems in Eclampsia. I. Smiley, New York.—p. 210.
Radicular Pain and Its Relation to Spondylitis Deformans from a Neurologic Viewpoint. C. Rosenbeck, New York.—p. 215.
Laboratory Procedures of Interest to Urologist. L. Nerb, Brooklyn. —p. 216.
Local Anesthesia for Dental, Oral, Nose and Throat Surgeons. H. E. Tompkins, New York.—p. 220.
Some Anomalies in Laryngology. S. Cogen, Philadelphia.—p. 223.
Administrating Chlorin Gas Without Special Apparatus. F. S. Macy, New York.—p. 225.
Deficiency of Halogens in Modern Dietetics. C. E. Carter, Los Angeles. —p. 226.
Hippocratic Nephritis. J. Wright, Pleasantville, N. Y.—p. 230.
Chervein, A Pioneer Epidemiologist. W. C. Rucker, New Orleans. —p. 232.

SUPPLEMENT

Bradycardia. B. T. Parsons-Smith, London.—p. lxv.
Significance and Consequences of Hypertension. E. P. Boas, New York.—p. lxxii.

Mitral Stenosis. L. F. Bishop, New York.—p. lxxvii.
Quinidin Sulphate in Auricular Fibrillation. S. Neuhof, New York. —p. lxxviii.

Blood Sugar in Surgical Conditions.—Bartle cites five cases illustrating the statement that there is often prevalent in infective cases a high blood sugar which can be remedied either by diet alone or by diet plus insulin.

Tonsillitis a Symptom.—Wilson regards tonsillitis as a symptom, a cause for which can in most instances be found, and cause and effect are together relieved by appropriate treatment. Tonsillectomy has its place, but it is not a general cure-all for toxemia. It should only be performed when necessary, after a careful, discriminating diagnosis; not with the thought that it is harmless, whether it helps or not.

Minnesota Medicine, St. Paul

7: 575-628 (Sept.) 1924

*Clinical Features of Coronary Sclerosis. F. A. Willius, Rochester.—p. 575.
Radium in Benign Condition of Nose and Throat. L. A. Lane, Minneapolis.—p. 578.
*Hypertension: Index to Toxemia of Pregnancy. R. D. Mussey and L. M. Randall, Rochester.—p. 583.
Roentgen Ray in Obstetrics. M. N. Moss, St. Paul.—p. 586.
Intussusception in Infants. W. B. Grise, Austin.—p. 590.
Interpretation of Abdominal Pain in Children. T. Myers, St. Paul.—p. 594.
*Attempted Prevention of Measles in Private Practice. S. W. Adler, Winona.—p. 600.
Value of Proctology in General Practice. L. A. Buie, Rochester.—p. 604.
Diet and Rest in Treatment of Cardiovascular Disease. J. E. Crewe, Rochester.—p. 606.
Costochondral Graft for Repair of Skull Defects. A. M. Hanson, Faribault.—p. 610.

Coronary Sclerosis.—Correlation of clinical data and necropsy findings was made by Willius in eighty-six cases of coronary sclerosis coming to necropsy. The cases are grouped in five classes: (1) typical angina pectoris; (2) atypical angina pectoris; (3) progressive myocardial failure; (4) angina pectoris and progressive myocardial failure, and (5) occult coronary sclerosis. In 40 per cent. of these cases, the diagnosis of coronary sclerosis was not made by the clinician. In carefully reviewing the records of the patients, it was found that there was insufficient subjective or objective evidence of heart disease to establish the diagnosis with the usual clinical methods of examination. The average degree of coronary sclerosis was moderate and occlusion occurred in only 15 per cent. of the patients. There was no instance of coronary embolism. The theoracic aorta was diseased in 99 per cent. of the eighty-six cases; there were sclerosis, atheroma and ulceration in 90 per cent., and syphilis in 9 per cent. The abdominal aorta was sclerotic, atheromatous and ulcerated in 21 per cent. of the cases, and in one case a nonsyphilitic aneurysm was present. The cardiac valves were involved by sclerosis, fibrosis or atheroma in 50 per cent. of the cases, while in one case an acute vegetative tricuspid endocarditis was present. The aortic valves were affected with greatest frequency, and the mitral and tricuspid valves in order of frequency. There was evidence of myocardial degeneration in all cases. In two cases there were areas of necrosis, and in one case, brown atrophy. Infarction of the myocardium occurred in 8 per cent. of the cases. Disease of the pericardium was found in 9 per cent. of the cases, and consisted of chronic adherent pericarditis in four, chronic fibrinous pericarditis in two, terminal fibrinous pericarditis in one case, and obliterating tuberculous pericarditis in one. Arteriosclerosis of the peripheral vessels was evident in 70 per cent. of the cases, and arteriosclerosis of the kidneys in 37 per cent. Cerebral arteriosclerosis was found in thirteen of the fifteen brains examined. Nephritis was present in varying degrees in 53 per cent. of the cases. There was disease of the gallbladder in 26 per cent. of the cases. Hypertension was present in 31 per cent. of the eighty-six cases. The average systolic pressure in the whole group was 183, the average diastolic pressure 111, and the average pulse pressure 72. The height and weight of forty-nine patients in this study were available and 29 per cent. were distinctly obese. Of the cases reported here, sudden death occurred in 37 per cent. The highest incidence occurred in patients with typical angina pectoris, 38 per cent. of the patients dying suddenly. In order of frequency, the other clinical types of coronary sclerosis attended by sudden death were: occult coronary sclerosis, 21 per cent.; angina pectoris with progressive myocardial failure, 19 per cent.; progressive myocardial fialure, 17 per cent., and atypical angina pectoris, 6 per cent. Death was the result of gradual cardiac failure in 15 per cent. of the cases. Causes other than heart disease were responsible for death in 48 per cent. of the cases. In this study, of the patients receiving electrocardiographic examination, 68 per cent. showed significant graphic abnormalities.

Relation of Hypertension to Pregnancy Toxemia.—Mussey and Randall reviewed the histories of 523 pregnant women; 104 of these had at some time during their pregnancy a systolic pressure of 140 or more. This hypertension is regarded as being a fair index of the onset of toxemia. Of the patients with hypertension below the age of 30, 72 per cent. had toxemia, while 54 per cent. of those with hypertension over the age of 30, had toxemia.

Prevention of Measles.—Adler discusses the value of the injection of whole blood from measles convalescents as a preventive measure, during an epidemic of measles. The project was to secure blood from some member of the family for injection into the nonimmunes who had had known exposure to measles. It was hoped to procure prevention or modification of the measles in the secondary cases. Donors included parents or blood relatives who had had measles at some remote period, and brothers or sisters recently suffering from the infection. In most cases these latter were the source of exposure of the recipients. Blood was drawn with aseptic precautions from the arm veins, a 30 c.c. syringe with rigidly attached needle being used. As soon as the blood was secured a second needle was substituted. The injection was made at once either intramuscularly or subcutaneously. No citrate was used, for it proved unnecessary. At most but three to four minutes need be consumed in completing the process for one or two recipients. No reaction followed the injections, and very little discomfort was reported. The method described can be utilized by any physician caring for measles cases in his private practice.

Missouri State Medical Association Journal, St. Louis

21: 297-328 (Sept.) 1924

*Prevention of Diphtheria. F. C. Neff, Kansas City.—p. 297.
Use of Insulin. W. H. Olmsted, St. Louis.—p. 300.
*Chronic Gout. D. R. Black, Kansas City.—p. 303.
Treatment of Infection of Terminal Phalanges of Hand. J. G. Probstein and H. S. Brookes, Jr., St. Louis.—p. 307.
Anesthesia in Cardiac Disease and Its Complications. E. Schisler and E. E. Brown, St. Louis.—p. 309.
Hay-Fever. C. H. Eyermann, St. Louis.—p. 312.
Public and County Health Officer. J. F. Chandler, Oregon.—p. 316.
*Sphenopalatine Ganglion Neurosis. J. D. Cook, Kansas City.—p. 319.

Prevention of Diphtheria.—In the campaign for state-wide prevention of diphtheria, Neff urges that active efforts should be made each year in all counties of the state to immunize the children. The local medical society and the board of health should be assisted by the state health board in getting the school authorities in each community to plan for the immunizing of all the school population. The local physicians should be prepared to immunize not only the older but the preschool children. By an active effort the state medical association can do much to assist in a state-wide reduction in this disease.

Gout.—Black feels justified in establishing a diagnosis of gout in the absence of proven sodium urate deposits, in a patient who has had one or more attacks of acute inflammation with characteristics described by Sydenham and whose blood uric acid is above 5 mg. per hundred cubic centimeters. In a case cited the uric acid level in the blood in no way influenced attacks of arthritis, neither did diet.

Symptoms of Sphenopalatine Ganglion Neurosis.—Cook's patient complained of attacks of pain centering about the right mastoid; these occurred about as often as he would "get in a strong breeze." In a characteristic attack the most marked pain was in the right mastoid region; here it was "real pain." Back of that toward the nuchal region it was "more of a drawing sensation." There were slight intermittent pains in the right outer canal. Deep within, the pain

extended from the posterior pharyngeal wall, lateral ward to the mastoid and posteriorly to the nuchal region described. There were "times when the soft palate got sore." The right upper teeth would ache but it did not add to the pain to chew on them. Around the right orbital rim "very slight soreness was the worst it ever got." There was no pain or pressure over the right infra-orbital region and no supra-orbital pain whatever. In some attacks the entire right side of the patient's head would get "numb," and in cold weather the right side of the face would get much colder than the left. An attack had to be very severe to involve the left side of the head in any way and then the involvement was only slight. Examination showed only a somewhat roughened naso-pharyngeal mucosa; there were no other local findings. Physical and functional ear examinations were negative. The only treatment was the cocainization of the right sphenopalatine ganglion. This was done in all nine times.

Southern Medical Journal, Birmingham, Ala.

17: 639-742 (Sept.) 1924

*Chronic Heart Disease in Children Without Rheumatic Fever. H. McCulloch, St. Louis.—p. 639.
*Treatment of Epidermomycoses of Feet and Hands. A. L. Glaze, Birmingham, Ala.—p. 643.
Diagnostic Errors. C. W. Dowden, Louisville, Ky.—p. 647.
Chronic Duodenal Stasis. J. R. Verbrycke, Jr., Washington, D. C.—p. 653.
Symptomatology of Chronic Intestinal Stasis. C. G. Lucas, Louisville, Ky.—p. 659.
*Hypothyroidism. J. T. King, Jr., Baltimore.—p. 662.
*Intestinal Parasites Around Nashville, Tenn. J. A. and Jack Witherspoon, Nashville, Tenn.—p. 669.
*Treatment of Hookworm Disease. S. B. Pessoa, Sao Paulo, Brazil.—p. 673.
Wassermann Test. H. M. Smith, Columbia, S. C.—p. 676.
Surgical Aspects of Chronic Intestinal Stasis. J. M. T. Finney, Baltimore.—p. 680.
Case of Uterus Didelphys. J. H. Blackburn, Bowling Green, Ky.—p. 684.
Operative Treatment of Fractures. J. S. Gaul, Charlotte, N. C.—p. 689.
Biliary Obstruction. D. C. Elkin, Atlanta, Ga.—p. 692.
Conservatism vs. Ablation of Diseased Ovarian Tissue. D. Gann, Jr., Little Rock, Ark.—p. 696.
Ulcerative Esophagitis with Perforation: Recovery. M. Equen, Atlanta, Ga.—p. 702.
Canna Seed in Trachea. M. P. Stiles, Birmingham, Ala.—p. 703.
Graduate Instruction in Medicine in United States. L. F. Barker, Baltimore.—p. 704.
Distinctive Functions of Undergraduate and Graduate Medical Schools. L. B. Wilson, Rochester, Minn.—p. 707.
Future of Full Time Teacher in Medicine. R. A. Kinsella, St. Louis.—p. 713.
Teachers of Medical Sciences. G. C. Robinson, Baltimore.—p. 715.
University Extension Work in Medicine. J. S. McLester, Birmingham, Ala.—p. 717.
Undergraduate Teaching in Medicine. W. Keiller, Galveston, Texas.—p. 720.
Teaching Obstetrics to Undergraduate Medical Students. C. R. Hannah, Dallas, Texas.—p. 725.
Teaching Palpation and Percussion in Physical Diagnosis of Thorax. J. B. Guthrie, New Orleans.—p. 730.

Chronic Heart Disease in Children.—Attention is directed by McCulloch to the fact that children suffer from chronic heart disease which is the result of changes in the heart muscle tissue. These changes, in turn, are due to the action of some poison liberated from a focus of infection. This focus is usually to be found in the nose and its accessory sinuses, as well as in the tonsils. Many of these children recover to such an extent that they may have no further cardiac trouble and may be restored to normal health. They may show characteristic rheumatic fever with objective signs in the joints, but more commonly the signs are lacking, though there may be joint or muscle pains. They should not be considered to have rheumatic fever.

Treatment of Epidermomycoses.—Glaze reports seventy-four cases prepared for treatment by a method which takes the offending barrier away from "specific" antimycotic medication. No originality is claimed for the formula. In the interim between the acute outbreaks which usually characterize vesicular tinea of the feet, the epidermis may be removed with a paste of strong salicylic acid, much of the offending fungus or mold coming away with the cast off skin. The formula, properly prepared, is of the consistency of stiff Lassar's paste. It is almost putty-like; and once on the skin, it clings with astonishing tenacity. It consists of: salicylic acid, 2 to 2½ ounces; powdered starch, ½ to 1 ounce; petrolatum, 3 ounces.

Hypothyroidism.—An analysis of 200 consecutive determinations of the basal metabolism reported by King showed thirty-six instances of basal metabolism less than minus 10 per cent. Most of these persons are believed to have suffered from thyroid insufficiency, while in a few the cause of the depressed basal metabolism is not clear. It is believed that the differentiation of cases of hypothyroidism into those that are "primary" and those that are "secondary" is justified. In many of the "secondary" cases, however, the condition responsible for depression of the basal metabolism is probably not thyroid deficiency alone. Treatment by mouth with thyroid extract or thyroxin or subcutaneously with thyroxin should be begun with great caution and continued gradually over months until the basal metabolism is within normal limits. If untoward symptoms develop the dose should be temporarily reduced. Cases of nonabsorption of thyroid extract and thyroxin are mentioned.

Intestinal Parasites in Nashville.—Of the 375 patients whose feces were examined by the Witherspoons for parasites, 19.5 per cent. showed some form of intestinal parasitism. Of these admissions, 12.8 per cent. had pathogenic amebae in the intestinal tracts. The parasite found most frequently was *Endameba histolytica*. Next in frequence was the flagellate group: *Chilomastix, Trichomonas intestinalis* and *Lamblia*. Thirty-two patients showed one or more types of flagellates. The patients in whom these parasites were found were admitted for all kinds of diseases. Only eleven of the seventy-three positives were sent to the hospital because of intestinal parasitism. Fourteen had appendicitis, four had gallstones and four had gastric ulcer.

Treatment of Hookworm Disease.—A mixture of carbon tetrachlorid and ascaridol, in a maximum dose of carbon tetrachlorid, 1 mil, and ascaridol, 0.75 mil, removed 94.5 per cent. of the hookworms harbored by a group of twenty patients reported on by Pessoa. A dosage of 0.75 mil of ascaridol, followed in half an hour by 1 mil of carbon tetrachlorid, removed 94.3 per cent. of the hookworms harbored by a group of twenty-eight persons. Four of the five cases of intoxication noted following the administration of carbon tetrachlorid were observed in chronic alcoholics, two of whom showed evident signs of hepatic cirrhosis. In suitable cases the carbon tetrachlorid could be administered in larger doses (2 to 3 mils) with ascaridol in doses of 0.5 mil to 0.75 mil. Such treatment would probably be sufficient to cure. The contraindicated cases might be treated with chenopodium oil or ascaridol, in accordance with the standard method.

Tennessee State Medical Association Journal, Nashville

17: 113-148 (Aug.) 1924

Duplication of Kidney Pelvis and Ureter with Infection. R. A. Hennessey, Memphis.—p. 113.
Indications for Treatment of Fibroid Tumors of Uterus. W. C. Dixon, Nashville.—p. 117.
*Case of Rabies. R. C. Kimbrough, Madisonville.—p. 120.
Treatment of Acute Mechanical Intestinal Obstruction. F. W. Smythe, Memphis.—p. 122.
Acute Intestinal Obstruction. L. B. West, Chattanooga.—p. 124.
Deafness from Syphilis. J. B. Blue, Memphis.—p. 133.
Adenomyoma. T. L. McGehee, Memphis.—p. 138.

Late Rabies.—In Kimbrough's case symptoms of rabies were not manifested until two months after the patient had been bitten by the dog. There were no remissions, no convulsions, and the irritability was controlled with ordinary sedatives in large doses. The man died after ten days of illness. The brain was removed and Negri bodies were found.

Texas State Journal of Medicine, Fort Worth

20: 265-316 (Sept.) 1924

Opportunities of Family Physicians. J. E. Dildy, Brownwood.—p. 272.
*Intestinal Obstruction. C. W. Flynn, Dallas.—p. 274.
Imperforate Anus: Three Cases. V. H. Keiller, Galveston.—p. 278.
Raising Standard of Obstetrics in Texas. M. C. O'Brein, San Antonio.—p. 282.
Cases of Foreign Bodies in Lung and Esophagus. G. S. McReynolds, Temple.—p. 284.
Therapeutic Use of Blood in Infancy and Early Childhood, with an Easy Method of Transfusion. H. L. Moore, Dallas.—p. 288.
Bone Lesions of Smallpox. W. L. Brown and C. P. Brown, El Paso.—p. 289.

*Abdominal Pregnancy At or Near Term. R. M. Hargrove, Houston.—p. 291.
Repair of Perineum. C. R. Hannah, Dallas.—p. 294.
*Liver Function Tests. M. D. Levy and E. Morford, Houston.—p. 296.
*Multiple Sclerosis: Case. C. W. Stevenson, Wichita Falls.—p. 299.
Place of Anatomy in Medical Curriculum. W. Keiller, Galveston.—p. 302.
Responsibility of Physicians for Accuracy in Diagnosis of Pulmonary Tuberculosis. J. Potts, Fort Worth.—p. 304.

Intestinal Obstruction.—Flynn analyzes 55 cases of acute intestinal obstruction, with 19 deaths, and 10 cases of obstruction due to carcinoma of the bowel, with 4 deaths. The etiologic factors may be listed as follows: postoperative adhesions, 17; complication of appendicitis, 11; complications of operations in the pelvis, 9; volvulus, 6; fecal impaction, 3; strangulated hernia, 3; Meckel's diverticulum, 2; tumor—lumen of ileum, 1; dynamic ileus, 1; mesenteric thrombosis, 1; gastro-enterostomy, 1; and cancer of the large bowel, 10. A study of the records of the fatal cases in this series shows that all these patients had been sick for several days; therefore, the delay in diagnosis and consequently the postponement of operation, convicts the medical adviser of poor judgment. Practically all patients had been purged, thus accounting for perforations, gangrene and peritonitis. Most of the patients had been given opiates, which masked the symptoms, gave false security and delayed surgical intervention. The physical condition of every patient was critical when he finally came to operation, which was unfair for patient and surgeon alike. Sixteen of the nineteen patients were given gas and ether anesthesia, which contributed vasomotor changes and shock. Operation revealed difficult technical problems in every case, which were simple conditions early in the disease and could have been quickly and successfully dealt with in most instances. The operations were prolonged, varying from fifteen minutes to one hour and fifteen minutes. Simple enterostomy, under local anesthesia, can be performed in fifteen minutes. This operation, alone, was not performed on any of the fatal cases. Fourteen of the nineteen patients died within twenty-four hours of the operation, which means that the surgical management of such cases is still unsatisfactory. The delay in diagnosis and in advising operation in acute mechanical intestinal obstruction, is the first great mistake. At operation, too much manipulation, with accompanying shock, defeats the surgeon's efforts and robs the patient of a chance to come back.

Abdominal Pregnancy.—A case is reported by Hargrove to emphasize the important points in the diagnosis and treatment of secondary abdominal pregnancy. First, the history of the abdominal pain and supposed miscarriage at about the end of the first month, was not brought out until the patient was dead. Second, her automobile accident was too strongly urged as an excuse for her symptoms. Third, if she had had a ruptured uterus at the time of the injury, she would surely have had a fatal hemorrhage or at least more shock. Fourth, an operation on December 17, at which time the fetus was still alive, would have resulted in a live baby, and a chance for the mother. Fifth, the temperature present at the time of operation was probably indicative of the presence of peritonitis, and any lines of treatment would have resulted in disaster. Sixth, recognition of the true condition at the proper time would have saved the necessity of admitting an error in judgment, for the placenta would then have been left in situ and drainage instituted.

Liver Function Tests.—Cases of various conditions are reported by Levy and Morford in which liver function tests were made. The results of three function tests indicate that it is impossible to determine all the functions of the liver by any single test. A slight modification in the usual technic of the phenoltetrachlorphthalein test is described. In several moderately severe hepatic cases, a decided change from the normal is noted with the phenoltetrachlorphthalein test. Results of their own study convince the authors that change from the normal with this test indicates hepatic dysfunction.

Multiple Sclerosis.—Stevenson reports a case of multiple sclerosis in which the classical symptoms, scanning speech, nystagmus, volitional tremor, in addition to loss of abdominal reflexes, spastic ataxia, normal pupils and normal laboratory findings, with a history of remission of symptoms and mental disturbances, were present. It was as near a typical textbook picture as could be found, and the diagnosis was apparent almost as soon as the patient was seen.

Virginia Medical Monthly, Richmond

51: 327-392 (Sept.) 1924

*Massive Doses of Digitalis in Pneumonia. W. A. Shepherd, Richmond and B. Steinberg, Boston.—p. 327.
Survey of Germicides Employed in Male Urethra. T. V. Williamson, Norfolk.—p. 329.
Gastro-Intestinal and Other Disturbances Associated with Fissures and Hemorrhoids. G. R. Satterlee, New York.—p. 334.
Treatment of Esophageal Stricture Due to Lye Burn. A. A. Burke, Norfolk.—p. 337.
Shame of Modern Medicine: Getting Postgraduate Education in Pharmacology and Therapeutics from Propaganda of Proprietary Drug Houses. F. R. Taylor, High Point, N. C.—p. 338.
Lactic Acid Milk in Infant Feeding. T. D. Jones, Richmond.—p. 341.
Ectopic Pregnancy. H. W. Phillips, Norfolk.—p. 344.
Epidemic of Pneumococcic Infection at Eastern State Hospital. E. H. Alderman, Williamsburg.—p. 348.
Perforating Gastric Ulcer. S. B. Moore, Alexandria.—p. 352.
Malaria Control. J. H. Crouch, Williamsburg.—p. 354.
Two Cases of Focal Infection. G. T. Klipstein, Alexandria.—p. 357.
Certain Phases of Preventive Medicine in Growth and Development of Childhood. J. H. Hiden, Pungoteague.—p. 359.
*Epidemiologic Studies of Typhoid in Virginia During 1923. G. C. Payne and H. P. Carr, Richmond.—p. 363.
*Schick Test; Immunization by Toxin-Antitoxin Mixture. H. M. Wallace, Greenville.—p. 365.
Acquired Characters and Heredity. C. L. Redfield, Chicago.—p. 366.
Psychanalysis. G. B. Rollins, Richmond.—p. 368.

Digitalis in Pneumonia.—Shepherd reports five cases of pneumonia in which from 11 to 26 drams of tincture of digitalis were administered in the course of from three to seven days with good effect.

Milk Transmits Typhoid.—One hundred and nineteen cases of typhoid fever were investigated by Payne and Carr in various parts of the state. The vehicle which was found to have transmitted the infection in the greatest number of cases was milk. The number of cases which were traced to known carriers constituted 12.5 per cent. of the number investigated.

Diphtheria.—Wallace reports on the use of the Schick Test on 1,482 children and the immunization of 1,011 children by three separate doses of the toxin-antitoxin mixture.

West Virginia Medical Journal, Huntington

19: 449-504 (Sept.) 1924

Brain Injuries. W. Sharpe, Wheeling.—p. 449.
Treatment of Compound Fractures. R. J. Wilkinson, Huntington.—p. 464.
Ocular Disturbance Due to Intranasal Pressure and Sinus Involvement. C. B. Wylie, Morgantown.—p. 465.
Fracture of Femur by Indirect Violence Four Years After Treatment for Juvenile Deforming Osteochondritis. E. B. Henson, Charleston.—p. 471.
Simultaneous Traumatic Dislocation of Both Humeri. A. P. Heineck, Chicago.—p. 473.
Case of Strangulated Indirect Inguinal Hernia in Infant Two Months Old: Operation. A. G. Rutherford, Welch.—p. 479.
Cocainization of Nasal Ganglion. H. C. Miller, Eglon.—p. 479.
Problem of Medical Department in Development of Adequate Reserve Corps. G. I. Jones, Washington, D. C.—p. 482.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Annals of Tropical Medicine and Parasitology, Liverpool

18: 131-241 (Aug. 2) 1924

Plasmodium Agamae. S. Adler.—p. 131.
Rat-Fleas in Freetown, Sierra Leone. B. Blacklock and M. G. Thompson.—p. 135.
Trematode Parasites of Food Mammals of Rangoon. G. D. Bhalerao.—p. 139.
*Casual Organism of Rat-Bite Fever in Man. A. Robertson.—p. 157.
Cestodes in School of Tropical Medicine, Liverpool. T. Southwell.—p. 177.
Parasites Found in Natives of Sierra Leone. P. A. Maplestone.—p. 183.
Stoll's Method of Counting Hookworm Eggs in Feces. P. A. Maplestone.—p. 189.
Life History of Reptilian Tapeworm. F. J. Meggitt.—p. 195.
New Variety of Glossina Schwetzi from Belgian Congo. W. H. Potts.—p. 205.
*Crescent and Red Cell. J. W. W. Stephens and R. M. Gordon.—p. 207.
*Human Schistosomiasis Due to Schistosoma Haematobium. D. B. Blacklock and M. G. Thompson.—p. 211.

Classification of Schistosome Cercariae. B. Blacklock and M. G. Thompson.—p. 235.
Larva of Tumbu Fly in Eyelid. B. Blacklock.—p. 239.
Hatching in Vitri of Eggs of Oxyuris Equi. T. Southwell.—p. 239.

Spirillum Minus Causes Rat-Bite Fever.—Robertson fails to see any reason for supposing that the spirilla in the blood of naturally infected mice, rats, bandicoots, etc., belong to more than one species. The species of spirillum which is the causal organism of rat-bite fever in man is not distinct from the species found naturally in the blood of animals. The correct name for the causal organism of rat-bite fever in man is *Spirillum minus*, Carter, 1887.

Crescent and Red Cell.—Stephens and Gordon draw attention to the variable relationship existing between the crescent and the red cell. Specimens obtained by them show clearly that in many cases the poles of the crescent project beyond the red cell, but they have been unable to determine the relationship of the body of the crescent to the red cell, although the general impression given after examining a very large number of crescents is that the body also is extracellular. The crescent appears to be a flat ribbon shaped structure, the ends of which, in thick portions of a film are generally incurved, while in thin portions the crescent lies flat.

Schistosomiasis Caused by S. Hematobium.—During an investigation into the prevalence of schistosomiasis in certain districts of the Protectorate Sierra Leone, infection due to *Schistosoma haematobium* was the only type of the disease found by Blacklock and Thompson. *Physopsis* c. f. *globosa*, Morelet, was proved to be the intermediate host; the infection rate in the mollusc with cercariae of *S. haematobium* was often very high, e. g., 42 per cent. in a water latrine. A description is given of the morphology of the cercaria of *S. haematobium;* it differs markedly from the description of this cercaria at present accepted. A critical analysis of the basis of the existing description is undertaken. Some facts relating to the bionomics of *Physopsis* c. f. *globosa* are mentioned; experiments showed that this snail was resistant to drying to an unexpected degree. Of snails placed on mud in the shade a large percentage survived for a fortnight when the water was drained away gradually.

British Journal of Experimental Pathology, London

5: 199-260 (Aug.) 1924

Serologic Grouping of Hemolytic Streptococci; Streptococcus Scarlatinae. G. H. Eagles.—p. 199.
Immunizing Properties of Bacterial Antigens Prepared After Various Methods. II. N. S. Ferry and L. W. Fisher.—p. 205.
*Difference Between Bilirubins of Obstructive and Hemolytic Jaundice. C. H. Andrewes.—p. 213.
Action of Radium and Roentgen Rays Correlating Production of Intestinal Changes, Thrombopenia and Bacterial Invasion. J. C. Mottram and A. N. Kingsbury.—p. 220.
Variation Phenomena in Streptococci: Virulence and Immunity in Mice and Rabbits. M. L. Cowan.—p. 226.
*Poisonous Properties of Colloidal Silica. III. W. E. Gye and W. J. Purdy.—p. 238.
*Agglutinins in Typhoid Fever. F. M. Burnet.—p. 251.

Bilirubins of Obstructive and Hemolytic Jaundice.—According to Andrewes the bilirubin present in the serum of cases of obstructive jaundice differs in its behavior from that present in hemolytic jaundice. Experiments are presented which show that the differences are not referable, as many have thought, to a linkage of the pigment in homolytic jaundice with a protein, nor yet to any union with a phospholipoid. It is possible that fresh human bile contains some of the "hemolytic" as well as of the "obstructive" type of pigment. The "obstructive" form of bilirubin can be made to go over to the "hemolytic" form by heating or by prolonged standing at room temperature. New evidence is adduced to support the view that "hemolytic" bilirubin is identical with "hematoidin."

Poisonous Properties of Colloidal Silica.—It is shown by Gye and Purdy that the silicon ion is toxic to mice, rats, guinea-pigs and rabbits; and the toxic effects have been traced to structural changes in the capillary endothelium. The tissue changes which end in cirrhosis of the liver have been studied, and it has been shown that they consist in a slow thickening of capillary boundaries by a deposit of collagen. The usual explanation of the process which leads to cirrhosis of the liver in man is that it is merely a replacement of destroyed liver cells by fibrous tissue, but the changes which precede the fibrosis are not definitely known. Whether or not colloidal silica plays a part in producing pathologic conditions in man could not be determined. The substance is very largely distributed in nature. It is present in small quantities in most foods and beverages, in a few in relatively large quantities. Silica is found also in the tissues and fluids of animals. Berzelius showed more than a hundred years ago (1812) that it is present in urine to the extent of 30 mg. per liter.

Agglutinins in Typhoid.—Serum from patients with typhoid fever almost always contains two independent agglutinins corresponding to the S and R agglutinogens of the bacillus. An account is given by Burnet of the conditions under which R agglutination is shown by these serums, and of the factors concerned in the inhibition of this type of reaction with standard bacillary emulsions. In nearly all cases of typhoid fever both agglutinins are present in easily recognized amounts. In persons inoculated with typhoid vaccines subcutaneously only traces of R agglutination can be demonstrated, unless an active typhoid infection is present as well. This difference may be of considerable value in the diagnosis of typhoid fever in inoculated communities.

British Medical Journal, London

2: 305-348 (Aug. 23) 1924

*Recent Advances in Treatment of Sprue. H. H. Scott.—p. 305.
*Psittacosis. Report of Two Cases. G. L. Gulland.—p. 308.
Smallpox. W. M. Wanklyn.—p. 309.
Prevention of Mental Deficiency. A. F. Tredgold.—p. 316.
Case of Otitic Cerebrospinal Meningitis Recovery. W. F. Fedden and G. M. Kendall.—p. 323.
Vaginal Occlusion: Urinary Calculus: Cesarean Section. H. E. K. Fretz.—p. 323.
Table of Standard Diets for Use in Diabetes. R. Pybus and D. M. Lyon.—p. 326.

Sprue.—A series of cases of sprue in progressive degrees of severity is recorded by Scott, comparing the results obtained under ordinary methods of treatment, expectant and empirical, with those obtained from treatment with calcium lactate and parathyroid gland.

Psittacosis.—Gulland records two cases because of the fatal character of the disease and the difficulty in diagnosis. It is more than likely that the disease is more frequent than is supposed; it might easily be diagnosed as pneumonia, or influenza with pneumonia, in the typical cases, or as paratyphoid in the rarer cases without marked pulmonary involvement. Its occurrence in house epidemics and its relation with parrots are the obvious criteria.

Indian Journal of Medicine, Calcutta

5: 1-92 (Jan.) 1924

Medical Research and Ourselves. U. N. Brahmachari.—p. 1.
Treatment of Gonorrhea: Complications in Males. P. B. Mukherjee.—p. 10.
Case of Gallstones Complicated by Empyema of Gallbladder—Cholescystectomy—Cure. W. L. Harnett.—p. 23.
Diabetes Mellitus: Its Treatment. S. K. Barat.—p. 27.
Difficulties in Treatment and Diagnosis of Malaria Fever. U. N. Brahmachari.—p. 40.
*Enlarged Spleens in Bengal. M. M. Dutt.—p. 74.
*Case of Plague. B. B. Roy.—p. 79.

Enlarged Spleens in Bengal.—Dutt has observed that about 35 per cent. of the cases of enlarged spleens met with in Bengal have signs and symptoms typical of leishmaniasis. About 40 per cent. of the cases showed a blood picture which may be termed an intermediate group, which may be kala-azar or malaria. About 16 per cent. of the cases turn out to be malaria. About 60 per cent. proved to be cases of splenomedullary leukemia. The globulin test is positive in a larger majority of the cases of kala-azar than the formol-gel test. The double rise is present in about 40 per cent. of the cases. The formol-gel test is of value in only 50 per cent. of the cases.

Plague.—The points of interest in Roy's case were that this disease may simulate ordinary septic cellulitis, and there may be no glandular localization by way of enlarged glands even though it is in the cellulocutaneous tissue.

Journal of Cancer, Dublin, Ireland

3: 121-182 (July) 1924

*Is Cancer Infectious or Contagious? A. Charles.—p. 212.
Malignant Disease in Upper Air Passages. L. J. Curtin.—p. 143.
Evolution of Cancer of Breast During Gestation. H. Vignes.—p. 149.
Limitations in Radiotherapy of Cancer. F. C. Wood.—p. 156.
Erlangen Treatment of Malignant Diseases. W. Pilger.—p. 166.

Control of Cancer.—In order to control the cancer incidence, Charles suggests that cancer be made a notifiable disease; and that cancer patients be segregated, firstly, in the cause of the unfortunate sufferers and toward an allaying of the growing fears of the community as to the nature of the disease, and, secondly, that treatment may be given and experiments and research made under the best conditions.

Journal of Physiology, London

59: 1-98 (Aug.) 1924

Changes in Tensions of Carbon Dioxid and Oxygen in Gases Injected Under Skin and Into Abdominal Cavity. J. A. Campbell.—p. 1.
Graphic Registration of Oxygen Consumption and Carbon Dioxid Output. J. G. Dusser de Barenne and G. C. E. Burger.—p. 17.
*Breathing After Ingestion of Sugar. C. G. Douglas and J. G. Priestley. —p. 30.
Factors Affecting Theoretical Maximum Work of Muscle. T. Mashimo. —p. 37.
*Vagopressor Reflex. R. J. S. McDowall.—p. 41.
Reversible Hemolysis. L. E. Bayliss.—p. 48.
Maximum Frequency of Reflex Response in Spinal Cat. S. Cooper and E. D. Adrian.—p. 61.
Effect of Carbon Dioxid on Rate of Recovery in Nerve. S. Cooper.—p. 82.
Recording Respiratory Metabolism. E. H. J. Schuster.—p. 94.

Effect of Sugar on Breathing.—Douglas and Priestley assert that the rise of the respiratory exchange and respiratory quotient which results from the ingestion of cane sugar is accompanied by an increase in the breathing.

Vagopressor Reflex.—When the venous pressure in the large veins is low, section of the vagus causes a fall of arterial blood pressure. Reasons are put forward by McDowall why this is to be considered a vagopressor reflex, and not due to changes in the heart rate. The evidence indicates that when the venous pressure is low impulses pass up by way of the vagus and stimulate the vasomotor center and so increase the arterial tone. The importance of this reflex in supplementing the depressor reflex in conditions of blood loss is pointed out, and an explanation of the marked arterial constriction of secondary wound shock is afforded.

Journal of Tropical Medicine and Hygiene, London

27: 211-222 (Aug. 1) 1924

Experimental Moniliasis. P. Redaelli.—p. 211.

Lancet, London

2: 481-532 (Sept. 6) 1924

Diagnosis of Healthy Heart. J. Parkinson.—p. 481.
*Alkali Reserve of Blood in Coliform Infections of Kidney. W. H. Lepper and M. Martland.—p. 485.
*Cerebrospinal Fever. K. Lewkowicz.—p. 487.
*Treatment of Inebriety and Drug Habits. S. Park.—p. 491.
Epidemic Pleurisy. W. Attlee, A. M. Amsler and D. C. Beumont.—p. 492.
Case of Horizontal Dilation of Left Auricle. H. B. Shaw.—p. 493.
Rupture of Tubo-Uterine Gestation. Concurrent with Intra-Uterine Pregnancy. W. G. Nash.—p. 494.
*Unusual Referred Pain in Case of Chronic Appendicitis. B. Bruce-Porter.—p. 495.

Alkali Blood Reserve in Coliform Kidney Infections.—Lepper and Martland point out that no evidence that a condition of acidosis occurs in acute coliform infections of the urinary tract has been found either experimentally or clinically. The alteration in the amount of pus and bacilli in the urine following alkaline treatment is not sufficient to account for the improvement which takes place in the patient's symptoms. This improvement appears to be definitely associated with a decrease in the hydrogen-ion concentration of the urine, and it is reasonable to suppose that a urine of high hydrogen-ion concentration irritates the inflamed mucous membrane of the urinary tract.

Nature of Cerebrospinal Fever.—The fact that whenever a certain part of the subarachnoid space—e. g., the spinal theca—is cut off from communication with the ventricles and thus ceases to be continually infected, the meningococci there disappear immediately, and the inflammation thereupon assumes a serious character, Lewkowicz says, must be regarded as the best proof that an autonomous meningitis, independent of the ventricular process, does not exist at all. The conditions encountered by the infectious process in the cerebral ventricles are fundamentally different. The surface of these cavities is ontologically external, and possesses, in contrast with the meninges, not an endothelial but an epithelial lining. This layer constitutes normally for the proteins and thus also for the antibodies of the blood, an almost impenetrable barrier; and even in the course of ventriculitis, when the inflammatory exudate carries some amount of plasma into the ventricular cavities, this obstacle is very serious. It is also of great import that this exudate is continually diluted by the cerebrospinal fluid in the ventricles. So that the author concludes that the meningococci find in the cerebral ventricles extraordinarily favorable conditions for their existence, even more favorable than those on the mucous membranes of the respiratory passages. Consequently, they can maintain themselves here for weeks, and even for months sometimes, while the continuance of any other deep infectious focus has long become quite impossible. If cerebrospinal fever has been hitherto regarded as a primary purulent meningitis with ventriculitis as a possible secondary, but not necessary lesion, this opinion is based on the fact that in earlier stages of the disease the ventricular changes are often very slight and sometimes appear to be absent (to the naked eye), while thick and extensive layers of purulent exudate cover the meninges. So authors were induced to assume that this pus is formed in situ as a result of local purulent inflammation. In this supposition, however, Lewkowicz says, they did not take into consideration that the ventriculo-subarachnoid system is filled with fluid which exhibits a certain current, slight, it is true, but nevertheless permanent, as it is secreted exclusively in the cerebral ventricles by the choroid plexuses, and absorbed exclusively throughout the extent of the subarachnoid space. On account of this current, the possibility must be considered that the pus cells found on the meninges may sometimes, indeed, have been produced in situ, if the membrane received for absorption a fluid charged with free meningococci; but that, more frequently, they draw their origin from the ventricles or other parts of the meninges, on the filter. The largest accumulations of pus must thus arise in the areas where absorption of the fluid is most active. As of the two leptomeninges the arachnoid is the chief absorbent one, it will also be more affected. As regards distribution of the pus over the cerebral surface, it principally accumulates over the frontal and the anterior part of the parietal lobes because that is the highest part of the cranial cavity in a reclining patient; and thus the venules of the subarachnoid space must here show the lowest, perhaps even a negative blood pressure, and can exercise, on the fluid of the perivascular spaces which are continuous with the subarachnoid cavity, a definite sucking action. For accumulation of pus in the spinal theca, sedimentation may also be of some import. The notion that, in cerebrospinal fever, the ventricles constitute the only really essential site of infection is, no doubt, of great import for serotherapy, for it points out the fact that this cardinal focus must be attacked first of all by serum, the presence of serum in the subarachnoid space being without significance.

Treatment of Inebriety and Drug Habits.—Park speaks well of the McBride method, employing atropin and strychnin, but regards it not as a cure but only a help in certain cases. Given by the mouth, frequently, in small doses, he found the following extremely useful: nux vomica, cinchona, kola, damiana and gentian. Nux vomica by the mouth often gives better results than strychnin hypodermically. With regard to general treatment, ambulatory treatment nearly always fails and institutional treatment is essential. In treating this class of case it is not only a question of what drugs to use, but how to use them, and there is no doubt that the successful treatment of inebriety depends a good deal on the experience of the physicians and the technic employed.

Referred Chest Pain in Chronic Appendicitis.—In Bruce-Porter's case the patient complained of pain in the region of the right nipple area. Pressure over the appendix at once

caused the patient to cry out, and place his hand over the right nipple area. The appendix showed evidence of old and recent inflammation, and there were a few adhesions in the pelvic region. The appendix was removed. The chest pain has not returned.

South African Medical Record, Cape Town

22: 295-318 (July 12) 1924

Streptococcus Group and "Rheumatism." J. Pratt-Johnson.—p. 297.
Beginnings of Disease. H. F. B. Walker.—p. 302.
Drainage of Peritoneal Cavity. C. de W. Gibb.—p. 306.

22: 319-342 (July 26) 1924

*Hydatid Disease of Kidney. C. T. Villet.—p. 320.
*Infantile Mortality in South Africa and New Zealand. J. J. Boyd.—p. 321.
Embryotomy. A. Wells.—p. 331.
*Prophylactic Treatment of Bilharzia Disease. J. B. Christopherson.—p. 335.

Hydatid of Kidney.—Only eighteen cases have been reported in which the kidney was involved either alone, or in conjunction with a general echinococcus infection. Of the latter, the kidney was involved in from 0.02 to 5.4 per cent., according to various statistics. In Villet's case, the renal lesion was the only one present as far as could be clinically determined. The kidney was removed.

Infant Mortality in South Africa and New Zealand.—In South Africa and New Zealand the infant mortality has been 80 per thousand and 40 per thousand, respectively. Boyd discusses the reasons for this high rate and means for lowering it.

Prophylaxis of Bilharziasis.—The ideal prophylaxis of bilharziasis in Christopherson's opinion would be to attack it at all four periods of its cycle of existence at the same time: (1) the worm in the human host by antimony; (2) the snail by snail destruction methods; (3) the cercaria by the application of sound hygienic principles, and (4) the ovum (in feces and urine) by the adoption of healthy sanitary regulations. In actual practice the choice of prophylactic measures lies between therapeutic treatment of patients by antimony tartrate and destruction of the mollusc intermediate host.

Tubercle, London

5: 513-568 (Aug.) 1924

Results of Sanatorium Treatment. J. Watt.—p. 513.
*Treatment of Nonpulmonary Tuberculosis. H. O. West.—p. 523.
*Quartz Lamp Treatment. N. Robertson.—p. 527.
*Decline of Tuberculosis in Norwegian Town. K. F. Andvord.—p. 530.
Roentgenographic Pleural Annular Shadows. J. B. Amberson, Jr.—p. 534.

Treatment of Nonpulmonary Tuberculosis.—West reviews the results obtained in various institutions in the treatment of nonpulmonary tuberculosis, including the institution of which he has supervision, and arrives at the conclusion that the proximate result of prolonged institutional treatment is to bring about quiescence of the disease in at least 75 per cent. of all cases of nonpulmonary tuberculosis. The length of treatment required varies almost directly with the promptitude with which treatment is given after early diagnosis. The expectation of life will not seriously be diminished in early cases suitably treated, and diminution will be due essentially to any resulting crippling.

Quartz Lamp Treatment.—The lamp used by Robertson is the quartz mercury vapor lamp. It produces ultraviolet rays of from 400 to 200 millimicrons wave length. It is worked from direct current of 250 volts with a resistance so that 140 burner volts are produced with 2.5 current amperes. The beneficial effects are most striking in tuberculous cervical adenitis, lupus and tuberculids. That the good results are not due to auxiliary treatment is evident by the fact that those who attend as outpatients do equally well. Of cases of tuberculous cervical glands eight patients were cured, five much improved and progressing toward cure, and one patient was improved. Of the lupus cases two patients were cured, four partially cured or on the way to cure, and one patient was improved. In the two patients with tuberculids, cure was rapid and complete. There was little change in the spine and bone cases.

Decline of Tuberculosis in Norwegian Town.—Andvord regards the happening in this Norwegian town as being indicative of what is going on elsewhere in the world as regards pulmonary tuberculosis. During the past forty years the sources of infection in Kristianssand have been halved, the 200 cases of consumption, or the fifty-eight or sixty annual deaths from consumption, being reduced to about 100 cases, or twenty-eight or thirty annual deaths from consumption. This improvement will be seen to be still greater if the increase in the population of Kristianssand is taken into account; in about the eighties the mortality from tuberculosis was 5 per thousand, whereas in 1920 it was only 1.7 per thousand. Whatever the explanation may be of this very characteristic decline in the tuberculosis death rate in Kristianssand, it is satisfactory to note that the means taken to combat the disease seem to be fruitful, the results hitherto obtained being very satisfactory.

Annales de l'Institut Pasteur, Paris

38: 651-758 (Aug.) 1924

*Encephalitis of Rabbits. C. Levaditi, S. Nicolau and R. Schoen.—p. 651.
*Pseudo-Actinomycosis. H. Limousin.—p. 713.
Cerebrospinal Fluid in Diagnosis. W. Mestrezat.—p. 719.

Encephalitis of Rabbits.—Levaditi, Nicolau and Schoen report on their investigations on the nature of the virus of the encephalitis found by Kling, Davide and Liljenquist in rabbits. The results show that the germs are microsporidia, which may be found both in the brains and the kidneys of the animals. Inoculation of material from human encephalitis served only to produce a locus minoris resistentia for this virus of the epizootic encephalitis.

Pseudo-Actinomycosis.—Limousin describes the club-shaped threads around the foci of acid-fast paratuberculous bacilli in the kidneys of experimental animals. The injection has to be done preferably intravenously, and the amount of the bacilli should be large.

Archives de Médecine des Enfants, Paris

27: 513-576 (Sept.) 1924

Investigation of Child's Psyche Under Hypnosis. B. Szulczewski.—p. 513.
*Case of Tracheocele. S. Veras.—p. 547.
Case of Embryonal Hernia. H. Sztark.—p. 551.
*Digestive Infantilism. J. Comby.—p. 553.

Case of Tracheocele.—Veras describes a case of a double inferior laryngocele or tracheocele in a girl, aged 11. The hernia occurred through the cricothyroid membrane. The treatment consisted in reduction of the tumor and application of a pressure bandage. Operative intervention is not advisable.

Digestive Infantilism.—Comby accepts the American point of view on digestive infantilism. He agrees with Herter that the disturbance may be due to chronic toxi-infections of the intestine during the child's second year.

Bulletin Médical, Paris

38: 979-1006 (Sept. 6) 1924

*Incontinence of Urine in Children. J. Comby.—p. 985.
Comparison of Blood Pressure in Different Regions as Aid in Differential Diagnosis. Guillaume.—p. 987.

Incontinence of Urine in Children.—Comby regards essential nocturnal incontinence of urine in children as a general affection, a morbid temperament, the enuresis a special functional feature of this temperament, a localized manifestation of an inherited neuropathic or arthritic predisposition. Treatment therefore should be that for neuropathies in general, with emphasis on outdoor life and avoidance of stimulants and excitement. Hydrotherapy is a useful adjuvant, and he orders in addition 5 drops of a solution of 0.01 gm. of atropin sulphate in 10 gm. of boiled water, to be taken at bedtime, increasing by one drop each night until 10, 15 or 20 drops are being taken, according to the tolerance. If the incontinence is both diurnal and nocturnal, he gives 1 drop three times a day in addition. If the atropin fails, Joulie's solution of phosphoric acid might be tried (17 gm. of officinal phosphoric acid; 34 gm. of sodium phosphate, and 250 gm. of distilled water. The dose is a teaspoonful or dessertspoonful three times a day.) Jeanbrau has recently reported favorable results with this.

Gynécologie et Obstétrique, Paris

10: 81-144 (Aug.) 1924

*Tuberculosis of Breast Simulating Cancer. H. Hartmann, M. Renaud and G. d'Allaines.—p. 81.
Treatment of Epispadias in Women. G. Potel.—p. 94.
*Exophthalmic Goiter with Uterine Fibroma. M. Karsis.—p. 102.
*Uterine Cancer in Pregnancy and Parturition. Couvelaire, Portes and de Nabias.—p. 105.

Tuberculosis of Breast Simulating Cancer.—Hartmann, Renaud and d'Allaines report three cases of this kind. They cite twelve other instances, among them one patient observed by Anspach, and two in Mayo's clinic. The similar features of the tuberculous tumor with a carcinoma are the adherence to the skin, sometimes with retraction of the nipple, enlargement of axillary glands, and a slow development. The microscopic examination is often negative, while inoculations are positive. Biopsy is of help in diagnosis. It has to be borne in mind that tuberculosis of the breast may be associated with carcinoma. The only treatment is surgical.

Radium in Goiter Associated with Fibroma.—In Karsis' case a simultaneous cure of exophthalmic goiter and of a uterine fibroma occurred after radium treatment had been applied to the fibroma. A direct action of the radium on the goiter is excluded on account of the distance. The effect may be explained by the physiologic relation in endocrine metabolism between the functions of the ovaries and the thyroid.

Combined Treatment of Uterine Cancer During Pregnancy and Parturition.—Couvelaire, Portes and de Nabias describe intervention during labor in a case of carcinoma of the uterine cervix. After the cesarean section, supravaginal hysterectomy was followed by application of radium into the cervix through the abdominal incision. Speculum examination showed disappearance of the lesion, after a month. They advise during pregnancy to place the radium in the vagina, in contact with the cervix.

Journal de Chirurgie, Paris

24: 129-256 (Aug.) 1924

*Recent Fracture of the Femur. J. Waldenström.—p. 129.
*Submucous Lipoma in the Intestines. P. and A. Derocque.—p. 163.

Recent Fractures of the Neck of the Femur.—Waldenström remarks that the comparatively large proportion of cases in which treatment failed to restore approximately normal conditions has convinced him that the subject of recent fractures of the neck of the femur requires further study. Orthopedic treatment or complete abstention may be followed by bony consolidation. This has settled for him the question of surgical or orthopedic treatment in favor of the latter.

Submucous Lipomas in the Intestines.—The Derocques add another case to the 104 they have found on record. In only 7 of the total was more than one lipoma discovered. The symptomless cases formed 34 per cent. of the lipomas in the small intestine and 9 per cent. of those in the large. In 31 cases there was acute occlusion and in 56 the disturbances were of a chronic character. In the 72 causing symptoms, intussusception had occurred in 88 per cent. of the 32 small intestine cases and in 50 per cent. of the 38 in the large. In their personal case, the woman, aged 30, had complained of intermittent pains in the right or left side for ten years, when symptoms developed suggesting in some respects acute appendicitis, the intense pains recurring constantly. At the laparotomy the sixth week, the cecum seemed to be filled by a soft mass which could not be pushed along. It proved to be a submucous lipoma, the size of a mandarin orange, and was easily enucleated.

Journal d'Urologie Médicale et Chirurgicale, Paris

18: 1-103 (July) 1924

*Intervention in Urinary Calculi. R. Lévy.—p. 1.
Vaccine Therapy of Nongonococcus Urinary Infections at International Congress. Noguès et al.—p. 56.

Intervention in Urinary Calculi.—Lévy emphasizes that the retrograde motility of a calculus in the ureter must be determined with precision before any attempt at ureterolithotomy. He believes—his conclusion based on 378 cases—that an incision through the bladder is preferable to an incision in the iliac region for removing concretions in the lower part of the ureter.

Paris Médical

177-204 (Sept. 6) 1924

Ophthalmology in 1924. F. Terrien.—p. 177.
The Different Degrees of Choked Disk. A. Cantonnet.—p. 183.
*Vaccine Treatment of Hordeolum. G. Cousin.—p. 184.
Stomatology in 1924. P. Fargin-Fayolle.—p. 185.
*Dental Foci and Syphilitic Gumma. J. Bercher.—p. 190.
Otorhinolaryngology in 1924. L. Dufourmentel.—p. 191.
Syndrome from Nasal Syphilis. F. Bonnet-Roy.—p. 195.
Radical Mastoid Evidement. G. Liébault.—p. 197.
*Spasmodic Cough of Nasal Origin. M. Boutarel.—p. 200.

Vaccine Therapy of Hordeolum.—Cousin extols the treatment with vaccines in preventing relapses of sty. He uses preferably a stock staphylococcus vaccine, as an autogenous vaccine can be obtained only after three or four days. Two or three injections are administered, one every third day. In eighteen cases out of twenty the folliculitis of the lid disappeared, while in two instances relapses have persisted.

Teeth and Syphilitic Gumma.—Bercher points to the localization of syphilitic gumma in the intermaxillary bone. It is explained by the predilection of the spirochete for an inflamed or irritated region, such as is due to disturbances in the teeth, especially the incisors.

Cough of Nasal Origin.—Boutarel calls attention to an essential coughing with absence of pathologic findings. Resection of the hypertrophied mucosa of the turbinate bones has been employed in two patients, who did not manifest any other affection in the nose. Both recovered after they had suffered from spasms of severe coughing or a persistent cough for several years.

Presse Médicale, Paris

32: 721-728 (Sept. 3) 1924

*Oxidation of Glucose in the Body. L. Ambard, F. Schmid and M. Arnovlyevitch.—p. 721.
*Pyorrhea and Multiple Sclerosis. L. Dor.—p. 724.
*Blocking the Brachial Plexus. R. Reding.—p. 724.
*Modified Plethysmograph. A. Pruche.—p. 726.

Oxidation of Glucose in the Diabetic and in the Healthy.—Experiments made by Ambard, Schmid and Arnovlyevitch indicated that the rate of oxidation of glucose depends on the concentration of insulin, as well as of glucose, in the blood. The glycemia level influences also oxidation, indirectly, by increasing the secretion of insulin.

Pyorrhea and Multiple Sclerosis.—Dor believes in frequent associations of multiple sclerosis with optic neuritis, and of the latter with an infection of the gums and teeth. He assumes that such a chronic alveolar infection may be a factor in the etiology of multiple sclerosis.

Blocking the Brachial Plexus.—Reding obtained good results with injection of alcohol into the brachial plexus in a case of carcinoma in the breast. The injection did not cause any pain, and the patient had no further suffering until her death, which occurred three months after the injection. He illustrates the technic, and outlines the advantages of Kulenkampff's method.

Modified Plethysmograph.—Pruche suggests a plethysmograph which makes clinically possible measurement of the venous pressure at short intervals. He considers phlebomanometry as an effectual adjuvant of sphygmomanometry. Eight illustrations are given.

32: 729-736 (Sept. 6) 1924

*Early Signs of Lead Poisoning. F. Heim, E. Agasse-Lafont and A. Feil.—p. 729.
*Purpura and Colloidoclasis. V. de Lavergne and R. Bize.—p. 730.
*Localization of Lesions in Cirrhotic Liver. Noel and Rosier.—p. 732.
American Methods in Treatment of Ulcerative Colitis. Cheinisse.—p. 735.

Early Signs of Lead Poisoning.—Heim, Agasse-LaFont and Feil noted in almost all of twenty workers, dealing with lead, signs of poisoning from the very beginning, in some even colic and parotitis. They report also a case with an early developed pernicious anemia. They emphasize the necessity for early and repeated examinations of the blood.

Purpura and Colloidoclasis.—De Lavergne and Bize believe that purpura may be of colloidoclastic origin, as in cases which

follow the penetration into the organism of anaphylaxis-inducing substances, antipyrin, neo-arsphenamin, antiserums, or vaccines. They assume that some spontaneous cases of purpura with symmetrical eruption are manifestations of a digestive anaphylaxis. The skin reactions may help in diagnosis, and measures to induce antianaphylaxis may be effectual in treatment.

Localization of Lesions in Cirrhotic Liver.—Experiments on mice convinced Noel and Rosier that in cirrhosis the epithelial cells are primarily affected, and the changes in the connective cells are secondary. They are inclined to explain the primary localization of cirrhosis around the portal vein by the constant functioning of the periportal cells. This excessive activity makes the cells more fragile and more sensitive than are the cells around the center of the hepatic lobules. It is presumed that the same phenomena may occur in man.

Schweizerische medizinische Wochenschrift, Basel

54: 809-832 (Sept. 4) 1924

*Constitution and Morphology. H. Frey.—p. 809.
Indications for Sterilization. A. Goenner.—p. 817.
Prevention of Syphilis. B. Bloch.—p. 817.
Treatment of Bronchial Asthma. L. Gordon.—p. 819.
Attitude of Physician to Stimulants. A. Koller.—p. 820.
*"Simple Treatment of Hiccup." F. Johannessohn.—p. 821.

Constitution and Morphology.—Frey points out that not every difference from the norm constitutes a sign of degeneration. The scaphoid scapula (concave vertebral margin) which has been considered a sign of degeneration is simply an occupational change. Such paravariations are not inheritable. A floating tenth rib seems to be rather a step forward in the phylogenetic development. Nevertheless some authors consider it a stigma.

"Simple Treatment of Hiccup."—Johannessohn reclaims Plato's priority in the recommendation of the sneezing reflex in treatment of hiccup, as was pointed out editorially in our abstract from Hishikawa's paper, THE JOURNAL, May 24, 1924, p. 1738.

Pediatria, Naples

35: 1001-1064 (Sept. 1) 1924

*Etiology of Scarlatinal Otitis. G. Cartia.—p. 1001.
*Gonococcus of Infantile Vulvovaginitis. L. Bonacorsi.—p. 1009.
*Bacteriology of Umbilical Stump. A. Laurinsich.—p. 1022.
Treatment of Rachitic Deformities. N. Caprioli.—p. 1033.
Cerebellar Tumor in Girl Aged 3. S. De Villa.—p. 1038.
Generalized Vaccinia. A. Drago.—p. 1045.

Etiology of Scarlatinal Otitis.—Cartia concludes from four cases in his experience at Caronia's clinic that Di Cristina's germ is the etiologic agent of suppurative otitis media in scarlet fever patients. He considers the presence of streptococci as secondary.

Gonococcus of Infantile Vulvovaginitis.—Bonacorsi studied serologically the germs isolated from gonorrheal vulvovaginitis of small girls. She believes that these cocci are less virulent than in adults. Autogenous vaccines gave good results.

Bacteriology of Umbilical Stump.—Laurinsich examined bacteriologically the umbilical stump of the new-born. Comparative freedom from germs, especially the pathogenic, was evident in the 350 tests he made. Only 18 per cent. of the babies had pathogenic microbes, which did not, however, cause any inflammation.

Policlinico, Rome

31: 1127-1157 (Sept. 1) 1924

*Wassermann Reaction in Goats. O. Sciarra.—p. 1127.
Subphrenic Abscess from Echinococcosis. A. Capogrossi.—p. 1130.
Rare Sites of Echinococcus Cysts. G. Regoli.—p. 1132.
Incarcerated Echinococcus Cyst. C. Colucci.—p. 1134.
Transverse Suprahypogastric Groove. O. Finzi.—p. 1136.

Wassermann Reaction in Goats.—Sciarra produced a positive Wassermann reaction in goats by injections of various lipoid antigens. The reaction remained strong even after seven months. He concludes from this that a positive Wassermann reaction in man indicates immunity but not necessarily persisting infection. He believes that only the individual tolerance and clinical signs should direct the treatment after the diagnosis is established.

31: 1159-1193 (Sept. 8) 1924

Treatment of Malaria. F. Valenti and A. Tomaselli.—p. 1159.
Prevention of Syphilis. P. De Favento.—p. 1160.
*Water-Wheel Murmur. D. Mucci.—p. 1161.
Roentgenology of Duodenal Ulcer. O. Businco.—p. 1164.

Water-Wheel Murmur.—Mucci reports the history of a young man injured in the chest by a fall. There was a water-wheel murmur and slightly tympanic sound over the heart region and dyspnea. The murmur disappeared after two days and the man recovered.

31: 461-508 (Sept. 1) 1924. Medical Section

*Lymphangio-Endothelioma of Liver. E. Trenti.—p. 461.
*Pathogenesis of Splenomegaly in Malaria. Businco and Foltz.—p. 474.
*Interpretation of van den Bergh's Reaction. G. Biondi.—p. 497.

Lymphangio-Endothelioma of Liver.—Trenti reports the history and necropsy findings in a woman, aged 30, suffering from a lymphangio-endothelioma of the liver. The disease lasted two years.

Pathogenesis of Splenomegaly in Malaria.—Businco and Foltz examined forty-five cases of malaria histologically. They find that a characteristic—almost specific—reaction of the reticular tissue of the liver and spleen is one of the main causes of the enlargement of these organs in malaria.

Interpretation of van den Bergh's Reaction.—Biondi believes that Hijmans van den Bergh's indirect bilirubin reaction in the serum is due to urobilin. He prefers addition of acetic acid (De Martino) to that of alcohol used in the original test.

Riforma Medica, Naples

40: 793-816 (Aug. 25) 1924

Apical Tuberculosis. G. Margreth.—p. 793.
*Hallopeau's Pyodermatitis Vegetans. A. Versari.—p. 795.
The Paradoxic Action of Sodium Citrate. A. Tarsitano.—p. 800.
Determination of Blood Sugar. E. Pittarelli.—p. 801.
Surgery of Intussusception. F. Vivenza.—p. 802.

Hallopeau's Pyodermatitis Vegetans.—Versari describes a case of vegetating pyodermia with eccentric spreading. The affection differs clinically from Neumann's pemphigus vegetans. Roentgen-ray treatment had a beneficial effect.

40: 817-840 (Sept. 1) 1924

*Protein Intoxication and Blood Diseases. F. Pentimalli.—p. 817.
*Gas Embolism from Pneumothorax. C. Verdina.—p. 820.
Cancer of the Tongue. G. Cirillo.—p. 824.
*Epidemiology of Poliomyelitis. M. Gioseffi.—p. 826.
Diagnosis of Ileus. E. Aievoli.—p. 829.

Protein Intoxication and Blood Diseases.—Pentimalli produced by injections of proteins a chronic intoxication in various animals. Egg albumin caused anemia, egg yolk chiefly alterations of the granulocytes. Milk proteins acted on the lymphatic and monocytic system. He believes that chronic exogenous or endogenous protein intoxication is the cause of anemia and leukemia.

Gas Embolism from Pneumothorax.—Verdina's patient became unconscious during a refilling of her pneumothorax under a pressure of plus 8. She recovered after her head had been lowered for a few minutes, but was unable to see. Both retinae were completely anemic. She recovered after three days.

Epidemiology of Poliomyelitis.—Gioseffi reports his observations on the epidemic of poliomyelitis in Istria. There were at the same time cases of paralysis of fowls, pigs and dogs. An apparently atypical epizootic of chicken cholera associated with weakness or paralysis might have been of the same origin.

Revista de Ciencias Médicas, Mexico City

3: 133-187 (Aug.) 1924

The Influx of Foreign Physicians. Editorial.—p. 133.
*Carbon Tetrachlorid in Treatment of Hookworm. E. C. García.—p. 135.
Medical Geography of Northwest Mexico. V. Jiménez y Sánchez.—p. 141.
Social Factors Responsible for Delinquency. R. Santamarina.—p. 147.
Case of Malta Fever. F. Ocaranza.—p. 162.
Cytologic Study of Discharge from Electric Burns. L. González Guzmán.—p. 170.
The Curability of Syphilis. R. E. Cicero.—p. 172.
*Case of Gastric Syphiloma. A. Pedrajas.—p. 178.

Treatment of Hookworm.—Celso García's experience with seventy-one cases of hookworm confirmed the efficacy of

carbon tetrachlorid in removing the hookworm. It acts also on the trichocephalus, but not so constantly or vigorously as on the necator, unless larger doses are given. Some patients now under treatment are taking 6 c.c. daily to expel the trichocephalus. The drug acts also on ascarids, more constantly and with less difficulty than on the trichocephalus.

Syphiloma of the Stomach.—The symptoms and aspect in the case described by Pedrajas seemed to establish the diagnosis of cancer of the stomach in the woman, aged 37, even when the stomach was exposed at laparotomy. As the pylorus was permeable and the conditions seemed inoperable, the abdomen was sutured without further intervention. The microscope retrospectively corrected the diagnosis to syphilis of the stomach, and under specific treatment the woman began to improve at once although anachlorhydria still persists. Gastric syphilomas are usually distinguished by extreme movability and well defined outline, neither of which was the case here.

Semana Médica, Buenos Aires

2: 349-400 (Aug. 14) 1924

*Improved Technic for Obstetric Version. R. Araya.—p. 349.
*Splenectomy in Chronic Leukemia. F. C. Arrillaga.—p. 358.
*Tuberculosis in Mental Disease. A. Ameghino and A. Poiré.—p. 361.
*Ions and Respiration of Tissues. Roffo and Neuschlosz.—p. 365.
Hematuria in Pregnancy. M. L. Pérez and C. A. Plá Cárdenas.—p. 368.
Spectrography in Radiology. C. Heuser.—p. 372.

Improved Metreurynter.—Araya has been using since 1905 with increasing satisfaction a modification of the Champetier de Ribes inflatable bag. A tube traverses the bag and extends for 12 cm. beyond it, and physiologic saline is injected through this tube as desired to take the place of the lost amniotic fluid. The patient is in the Trendelenburg position and the dilatation from the bag and the restoration of the normal fluid environment for the fetus materially facilitate version or any internal maneuvers. In case of placenta praevia, it aids in dilatation, arrests the hemorrhage, and dilates the vagina also, thus facilitating delivery. He adds that in case of inversion of the uterus, the fluid accumulating in the vagina gently pushes the uterus back into place. He gives illustrations of each of these indications and the histories of some typical cases.

Splenectomy in Chronic Leukemia.—Arrillaga relates that one woman, aged 70, with chronic leukemia showed remarkable improvement after splenectomy, gaining 20 kg. in weight and being restored to active life. The blood count was not modified, however, and after a year the symptoms of lymphatic leukemia returned in an aggravated form, speedily fatal. In another case, with 194,000 leukocytes and other signs of myeloid leukemia, great improvement followed the splenectomy but as the blood count was not modified he gave a course of radiotherapy, exposing the sternum, knees, elbows and other regions, with return to active life and gain of 7 kg. in weight, the subjective improvement persisting for the fourteen months to date although the blood is still of the myeloid type. A third patient, with 372,000 leukocytes, was given a course of deep radiotherapy, under which the spleen and blood count returned to normal range, but the spleen was then removed to consolidate the cure. The woman has gained 27 kg. during the year since, the blood findings are normal, and she feels entirely well.

Tuberculosis in Mental Disease.—Ameghino and Poiré obtained a positive Besredka reaction for tuberculosis in 57 per cent. of 157 patients with various forms of mental disease, although in 33 per cent. in this group there was nothing else to suggest tuberculosis.

Action of Ions on Respiration of Tissues.—The research reported testifies that rubidium and selenium ions increase respiration in normal tissue cells, and reduce it in embryonal and in cancer tissue. The other ions tested did not display any influence.

Archiv für klinische Chirurgie, Berlin

130: 427-624 (Aug. 29) 1924

*Ferments in Relation to Cholecystitis and Ileus. L. Schönbauer.—p. 427.
Pathogenesis of Postinfectious Arthritis Deformans. Bonn.—p. 463.
Internal Injury of Knee Joint. R. Demel.—p. 473.
*Anastomosis Between Bile Ducts and Stomach. Haberland.—p. 492.
*Varices of Central Nervous System. R. Mühsam.—p. 522.
*Reduction of Dislocated Shoulder. J. J. Dshanelidze.—p. 550.
*Reduction of Dislocated Hip Joint. Idem.—p. 565.
Kidney Cancer with Metastases in Skin at Points of Lesser Resistance. Rosenburg.—p. 581.
*Bleeding in Gluteal Region. S. Ssokoloff.—p. 590.
*Primary Gastric Sarcoma. J. Sebestyén and A. Kalo.—p. 612.
Large Hemangioma with Cavities in the Spleen. E. Steden.—p. 616.
Misleading Findings in Stab Wound of Heart. Schönbauer.—p. 621.
Corrected Chart for Troell's "Exophthalmic Goiter."—p. 624.

Ferments as Causal Factors in Cholecystitis and Ileus.—Schönbauer reports from Eiselsberg's clinic experiments on 108 dogs which have apparently established, among other things, that trypsin in the bile, with obstruction of a biliary duct, is capable of inducing the clinical picture of gangrenous cholecystitis in the absence of infection. This was confirmed by a clinical case of acute peritonitis traced to gangrenous cholecystitis, but bacteriologic examinations were negative. The sterile bile, however, responded positively to tests for trypsin. The data presented teach that in bile peritonitis without perforation, and in gangrenous cholecystitis the gallbladder should be removed at once, regardless of calculi. In other series of dogs the experiments indicated that the toxic features of ileus are due to the peritoneum, even in the absence of infection in the peritoneum. The elements causing the toxic action are cleavage products of proteins, which can be demonstrated in the peritoneal effusion. But the elements responsible for this cleavage are ferments which respond to tests for trypsin. This suggests the prospect of effectual treatment of toxic ileus (without infection of the peritoneum) by an antiferment treatment after correction of the obstruction. With preventive injection of trypsin, the dogs could be immunized against ileus toxins.

Anastomosis Between Bile Duct and Intestine or Stomach.—After having joined the hepatic duct with the bowel in three cancer cases and one infant, Haberland studied the effects of similar operations on twenty-three dogs and seven rabbits. The testimony from his experience and review of the literature is in favor of anastomosis between the common bile duct and the stomach in case of irreparable occlusion of the former. Mechanical and ferment conditions are better, and the danger of ascending infection less than with anastomosis with the bowel.

Varices and Angiomas of Central Nervous System.—Mühsam concludes from a personal case of varices of the spinal cord and of angioma of the brain, and those on record, that the prognosis under operative treatment is discouraging. Elsberg alone has reported improvement or a cure in some of his six cases. None of the other 130 laminectomies for this purpose had more than a briefly transient effect.

Reduction of Dislocation of the Shoulder.—The illustrations show the patient lying on his side on the table, the edge of which comes to the axilla, the arm hanging perpendicularly, the head supported by an assistant. The muscles become relaxed in two or three minutes, and then the surgeon flexes the arm at the elbow at a right angle, and presses down with both hands on the forearm, first rotating the arm outward and then inward. The scapula being held immovable by the edge of the table, reduction occurs more rapidly and with greater ease, it is claimed, than with any other technic. The physician can reenforce his pressure with his knee if necessary. When the pressure is being applied, the trunk is canted slightly backward, and a little morphin beforehand aids in reduction. The procedure can be applied with the patient on a dining room table, a folded cloth under the scapula.

Reduction of Traumatic Dislocation of Hip Joint.—Dshanelidze reduces the dislocation with the patient in the prone position, the thigh hanging over the side of the table. After waiting two minutes, the physician raises the foot and presses with his knee in the right angle formed by the popliteal space, while with his other hand he presses on the lumbar region on that side. No anesthetic and no assistant are required. In thirty-six cases of recent backward dislocation of the hip joint, reduction was realized in this way. He thinks that the same principle might be applied to forward dislocations, but he has not encountered any of this kind.

Bleeding in the Gluteal Region.—Ssokoloff warns against applying the Momburg method for compressing the abdominal

aorta except in a vital emergency. Bleeding from the large vessels in the gluteal region is almost certainly fatal without prompt intervention. For this he advocates ligation of the hypogastric artery, with supplementary ligation of the bleeding vessels at the spot. The nine cases he reports demonstrate that the course of the superior and inferior gluteal arteries may vary by as much as 4 cm. after emerging from the bones.

Primary Perforating Gastric Sarcoma.—The large sarcoma in a woman, aged 41, had developed without symptoms until the last two months. Then slight pains under the right costal arch, aggravated by eating, led to roentgen-ray examination. The same evening perforation occurred, and the stomach was resected, with apparent recovery. Metastasis five months later, originating in retroperitoneal glands, proved fatal.

Deutsche medizinische Wochenschrift, Berlin

50: 1203-1234 (Sept. 5) 1924

*Goiter. H. Braun.—p. 1203.
Examination of Bile. M. Einhorn.—p. 1206.
*"Avoiding Tracheotomy." G. Bessau.—p. 1209. Idem. J. v. Bokay. —p. 1210.
*Toxicity of Serum. E. Herz and R. Weichbrodt.—p. 1210.
*Tuberculin Flocculation Test. Rodenacker.—p. 1211.
Epicondylitis of Humerus. K. Wachendorf.—p. 1215.
Urea Determination. Grifols y Roig and Helmholz.—p. 1217.
*Course of Leukocytosis. A. Kobryner.—p. 1218.
*Electrogram and Mechanogram. F. Kleinknecht.—p. 1219.
Immunity to Smallpox and Cowpox. F. W. Winkler.—p. 1219.
*Action of Strychnin on Coordination. S. de Boer.—p. 1220.
Pharmacotherapy of Dysentery. H. Ziemann.—p. 1220.
*Calcium Treatment of Intestinal Affections. Wiesenack.—p. 1222.
Case of Veronal Poisoning. W. Brandt.—p. 1223.
Progress in Orthopedics. H. Debrunner.—p. 1223.
Prussian Tuberculosis Law. Vonessen.—p. 1224. Conc'n.
France and the Internationality of Science. K. Finkenrath.—p. 1225.

Goiter.—Braun confirms the observation that goiter may be prevented in some regions by avoiding unboiled water. The amount of iodin used in prevention must be kept exceedingly low. One dose of 5 mg. every Sunday (0.25 gm. per year) is the maximum.

"Avoiding Tracheotomy."—In regard to avoiding tracheotomy and intubation, both Bessau and Bokay are absolutely opposed to Schlossmann's extremely conservative treatment of laryngeal stenosis in diphtheria, summarized here Aug. 23, 1924, p. 650. Whenever narcotics and rest fail, intubation is the best sedative.

Toxicity of Serum.—Herz and Wachendorf confirm Macht's experiments on inhibition of growth of plants by the serum from blood drawn the day before or on the first day of menstruation. They had similar results with the serum from patients in the excitement phase of catatonia or with jaundice, and after injections of killed proteus X 19 bacilli.

Tuberculin Flocculation Test.—Rodenacker compares the flocculation of the patient's washed erythrocytes with and without addition of tuberculin. He uses a set of tubes with increasing hydrogen ion concentration. An addition of alcohol makes the results more apparent.

Course of Leukocytosis.—Kobryner found waves of increasing and decreasing leukocyte counts during the day under various conditions. Aschner's phenomenon was only partially parallel to them.

Electrogram and Mechanogram.—Kleinknecht observed on chilled heart and striated muscles of frogs a fourfold prolonged interval between the electric phenomenon and the contraction. He believes that this suggests a possibility of separating the two phenomena.

Action of Strychnin on Coordination.—S. de Boer believes that strychnin poisons the interpolated coordinating neurons. It does not abolish tendon reflexes, because they are not coordinated movements. The alkaloid also eliminates the resistance in the collaterals and endings of the interpolated neurons. The disappearance of the coordination—not the tetanic spasm—is the main feature of strychnin poisoning.

Calcium Treatment of Intestinal Affections.—Wiesenack had good results with intravenous injections of calcium in paratyphoid, dysentery and botulism. He combines it in arsphenamin injuries with narcotics—especially morphin.

Klinische Wochenschrift, Berlin

3: 1657-1704 (Sept. 9) 1924

*Trypanocidal Substances of Serum. F. Rosenthal.—p. 1657.
*Function of Suprarenals. B. Kisch.—p. 1661.
*Respiration of Surviving Tissue. P. Wels.—p. 1663.
*Gonads and Metabolism. R. Plaut and H. A. Timm.—p. 1664.
*Neuromuscular Apparatus and Vegetative Innervation. R. Golant-Ratner and J. Ratner.—p. 1666.
Dosage of Ultraviolet Rays. P. Keller.—p. 1668.
Habitus and Disease. K. O. Henkel.—p. 1670.
*Spirochetes in Lochial Secretion. H. Zielke.—p. 1672.
*Lobelin in Carbon Monoxid Poisoning. Behrens and Pulewka.—p. 1677.
Fixation of Glycogen by Insulin. W. Raab.—p. 1678.
Drug Exanthem. W. Bothe.—p. 1678.
*Diagnostic Blunders in Tuberculosis in Children. M. v. Pfaundler. —p. 1679.
*Selective Diseases. O. Lentz.—p. 1685.
T. Sydenham. G. Sticker.—p. 1700.

Trypanocidal Substances of Serum.—Rosenthal reviews the literature on the trypanocidal action of serum. It is found only in man and the anthropoid apes. It is different from all other antibodies, and acts only in vivo, similarly to some drugs (Laveran and Mesnil). A decrease of this substance in grave diffuse affections of the liver had been observed by Ehrlich. It is also quite weak in the new-born, and this indicates deficient functioning of the liver. Recent researches localize its origin and action in the reticulo-endothelial cells, and an affection of this apparatus in infantile scurvy seems to account for the low trypanocidal action of the serum. Normal human serum loses its protective action in mice if their reticulo-endothelial cells are blocked with iron after previous extirpation of the spleen.

Function of Suprarenals.—Kisch extirpated successively both suprarenals in rabbits. Many of these animals survived but were less resistant to strain. The gland which remained in the body for some time after the extirpation of the first, was hypertrophied. The hyperglycemia which followed the operation changed after five hours into a hypoglycemia lasting forty hours. The blood sugar concentration was normal afterward, but its changes after stimuli (pain, fastening on the board) were lower than normal. Injections of epinephrin produced the usual hyperglycemia curve. The lactacidogen and inorganic phosphorus content of the muscles were normal. At first the calcium concentration in the serum becomes lower. At a later stage it is higher than normal.

Respiration of Surviving Tissue.—Wels found great difference in the respiration of surviving tissues of various species and of various organs of the same species—contrary to Büchner and Grafe, whose work was reviewed in these columns July 5, 1924, p. 75.

Gonads and Metabolism.—Plaut and Timm determined the basal metabolism in women castrated by roentgen rays. They found a lowered rate at the time of the beginning amenorrhea. A subsequent restitution of the previous rate was almost the rule. They assume a correlative disturbance of the thyroid gland as a cause of the temporary decrease in metabolism.

Neuromuscular Apparatus and Vegetative Innervation.—Golant-Ratner and J. Ratner recommend their method of comparing the threshold stimulus for tetanus and for simple contraction of a muscle. They use it to reveal local changes of sympathicotonus, and consider it a finer index of the epinephrin reaction than changes of blood pressure.

Spirochetes in the Lochia.—Zielke found spirochetes in the lochia from the vagina and cervix in 6.2 per cent. of 307 women he examined.

Lobelin in Carbon Monoxid Poisoning.—Behrens and Pulewka poisoned cats with carbon monoxid until the respiratory center was paralyzed. After this they injected lobelin, and observed a return of respiration.

Diagnostic Blunders in Tuberculosis in Children.—Pfaundler attributes most of the diagnostic failures in tuberculosis of children to the unfounded application of experience from adults to children. A child has, as a rule, not only no apical tuberculosis, but not even the "apex," which forms in puberty. Chronic cough in children is usually not of tuberculous origin. Roentgen plates are frequently like the Delphic oracle: objectively correct, but hard to explain. The tuberculin reaction, which is so much cheaper, is quite often omitted in children:

A negative reaction sometimes frees parents and child from months of worry and treatment. Children who go with a negative Pirquet to a sanatorium and who return with a positive were simply infected there.

Selective Diseases.—Lentz calls selective diseases those which affect only some of the patients who belong etiologically and epidemiologically in the same group. Instances are: pneumococcus pneumonia, general paralysis, cerebrospinal meningitis and encephalitis. The prevention of such diseases is extremely difficult.

Monatsschrift für Geb. und Gynäkologie, Berlin

67: 131-252 (Sept.) 1924

Vegetative System in Pregnancy. L. Seitz.—p. 131.
*A Misleading Interstitial Pregnancy. A. Heyn.—p. 149.
*Spontaneous Rupture of Umbilical Cord. W. Walz.—p. 156.
*Calcium Treatment in Acute Adnexitis. A. v. Fekete.—p. 162.
Inflammation of the Adnexa. O. Plümecke.—p. 172.
Parovarian Cyst and Dermoid. B. Liegner.—p. 178.
*Simplified Technic for Sedimentation Test. E. Klaften, L. Bodnar and W. König.—p. 180.
*Effect of Irradiations on Myoma. Y. Yamasaki.—p. 186.
Precautions in Prophylaxis of Ophthalmia Neonatorum. Israel.—p. 197

A Misleading Interstitial Pregnancy.—Heyn describes a case of an interstitial pregnancy with rupture and the expulsion of a full-term dead fetus into the abdominal cavity. The necropsy showed a complete disappearance of the whole fundus and of the uterine end of the right tube, involved in formation of the decidua.

Spontaneous Rupture of Umbilical Cord in Labor.—Walz reports an instance of a spontaneous rupture of the umbilical cord, in an otherwise normal labor, which was followed by a live birth. It is presumed that loops of the cord had been crushed at the end of the delivery, if only for some seconds.

Calcium Treatment in Acute Salpingo-Oophoritis.—Fekete extols the treatment with intravenous injections of calcium in acute, severe inflammations of the adnexa. He gives 10 c.c. of a 10 per cent. solution of calcium chlorid every second day, the total of injections ranging from six to eight. In most of his twenty-eight cases the fever and pains subsided after five or six injections. Calcium exerted also a favorable effect on excessive menstruation, hemorrhage and leukorrhea. The number of blood platelets decreased the day of the injection, to become normal after two or three days. The inflammatory hyperleukocytosis was not influenced.

Method for Sedimentation Test in Delivery.—Klaften, Bodnar and König's method proved that the speed of sedimentation is the same in retroplacental blood as in the veins, but it is slower in the blood of the umbilical cord. A decrease in sedimentation speed was noted in labor, followed by a gradual increase in childbed. They give the details of a simplified technic, using the serum alone, not citrated plasma, and erythrocytes all from one source and kept on ice.

Effect of Irradiations on Myoma.—Yamasaki's research showed that the autolytic process is not more marked in a pregnant uterus than in the nonpregnant; sometimes it is even lower. Autolysis occurs in a myoma, and the phenomenon can be increased by roentgen rays. Radium rays may also increase the autolysis.

Monatsschrift für Kinderheilkunde, Leipzig

28: 481-576 (Sept.) 1924

*Case of Purpura Fulminans. H. Bischoff.—p. 481.
Tuberculous Pseudoleukemia in Infants. D. Stöhr.—p. 486.
*Action of Proteins on Blood Sugar in Infants. Stern and Wozak.—p. 490.
*Femoralis Reflex in Tetany in Young Children. G. Petényi.—p. 494.
The Three Periods in Childhood. J. S. Galant.—p. 498.
Tetany and Alkalosis. E. Freudenberg and P. György.—p. 503.
Antisepsis and Natural Immunity. R. Kochmann.—p. 513.
*Epinephrin in False Croup. W. Arnold.—p. 515.
*The Thyroid in Mongoloid Idiocy. Thomas and Delhougne.—p. 519.
*Periosteal Lipoma with Giant Rib. Stammler.—p. 523.
Experiments with Vitamins on Infants. G. Petényi.—p. 529.
Vitamin Action of Vegetables. G. Petényi.—p. 536.
Resorption of Vitamins by Rectum. G. Petényi.—p. 540.

Case of Fulminating Purpura.—Bischoff observed a case of purpura fulminans associated with a severe status thymicolymphaticus in a child aged 20 months. The thymus weighed 53 gm. An acute gastro-intestinal catarrh had preceded the purpura by twelve hours. Both disturbances are explained by fulminating toxemia, from increased resorption from the acutely diseased intestine, already predisposed by the lymphatic status, as also by an increased reactivity of the organism, such as Hart ascribes to the action of the thymus in this status.

Action of Parenteral Protein Injections on the Sugar Content of the Blood in Infants.—Stern and Wozak's experiments on infants, aged from 2 to 5 months, proved that nonspecific serums decrease the glucose in the blood at latest in three hours, while injections of milk increase the amount in the same space of time.

Femoralis Reflex in Tetany of Infants.—Petényi claims to have found a new symptom in tetany of infants, the femoralis reflex. Percussion of the anterior part of the thigh, between the upper and middle thirds, causes the contraction of the quadriceps muscle, and a forward jerk of the leg. The research on thirty-seven children, under 3, with tetany showed the presence of this muscle reflex in 68 per cent. The phenomenon was manifest also in three out of 240 healthy infants, or those affected with different diseases, but apparently free from tetany.

Application of Epinephrin in False Croup.—Arnold treated six cases with applications of epinephrin on the laryngeal mucosa. The epinephrin exerted a favorable action on the local hyperemia and edema, in four of the six cases, while subcutaneous injections and inhalations were without effect.

The Thyroid in Mongolian Idiocy.—Thomas and Delhougne's research in three fatal cases of mongolian idiocy failed to reveal histologic changes, while the content of iodin in the thyroid was normal. A retarded ossification of the skull existed in two instances.

Periosteal Lipoma with Giant Growth of Rib.—Stammler reports a case of periosteal lipoma with excessive growth of one rib in a boy aged 9. The tumor had been first noticed at the age of 3 months. He says the complication with the giant rib is the first of the kind described to date. The lipoma returned repeatedly after extirpation, but retrogressed partially under roentgenotherapy.

Zeitschrift für Krebsforschung, Berlin

21: 337-414 (Aug. 26) 1924

*Local Irritation in Cancer Production. M. Borst.—p. 337.
*Tar Cancroids. M. Borst.—p. 344.
Connective Tissue Stroma in Tar Cancroids. M. Borst.—p. 344.
Chemotherapy of Cancer. R. Roosen.—p. 348.
Tumefaciens Tumors on the Sunflower. H. Auler.—p. 354.
Multiple Melanocarcinomatosis in Carrier Pigeon. Beck.—p. 361.
Acanthosis Nigricans. Flaskamp.—p. 369. Similar article reviewed, p. 1113.
*Action of Bacteria of Human Cancer on Animals and Plants. Blumenthal et al.—p. 387.
Institute for Cancer Research at Buenos Aires. Roffo.—p. 411.

Experimental Cancers.—Borst experimented on rabbits, some fed as usual, others with cholesterol, inducing local irritation in the ear by various means, including painting with tar, crude paraffin oil and other similar products or injecting crude paraffin oil subcutaneously, and forcing metal studs through the ear. The swelling and inflammation were more pronounced in the animals fed with cholesterol, and the proliferation, hyperplasia and lipoid infiltration appeared earlier in them and were also more exuberant. These phenomena were noted in 40 per cent. of the rabbits fed with cholesterol. Painting with a mixture of tar and crude paraffin oil showed, beside the hyperplasia, nodular infiltrations even outside the directly irritated regions. These nodular infiltrations developed rapidly, bled easily when the eschar was removed, and ulcerated later. About twelve such infiltrates appeared in four to eight weeks, more rapidly in the cholesterol fed animals. Microscopically these nodules seemed to be typical carcinoma. After an exploratory excision, however, these nodules retrogressed and some disappeared spontaneously, almost without leaving a trace. This suggests that the nodules were cancroids, not true cancer. Local irritation from various substances, inflammation, and general factors (cholesterol feeding) evidently all cooperate in production of cancer.

Cancers from Bacteria from Human Cancer Injected into Animals and Plants.—Blumenthal, Auler and Meyer inocu-

lated plants, mice and rats with cultures derived from cancers in different regions, and tumors developed at the points inoculated. In the rats they proved to be apparently true cancers; could be cultivated through many generations; in some of the animals they grew to be half the size of the body, and they caused metastases. The results were positive also in plants, similar to those obtained with *Bacillus tumefaciens*. The tumors were liable to retrogress unless they added kieselguhr to the cultures. This seemed to induce conditions approximately equivalent to those of a natural predisposition. The bacteria were found only in the extreme outer limits of the eight human cancers investigated, as it were, in the precancer phase. They formed large white colonies, and could be reobtained in pure culture from the tumors on beets induced by the inoculation.

Zentralblatt für Chirurgie, Leipzig

51: 1895-1958 (Aug. 30) 1924

*Pylorectomy as Indirect Operation for Ulcer. Madlener.—p. 1896.
A Conservative Attitude in Amputations. Schepelmann.—p. 1900.
Improved Operation in Phimosis. N. Feygin.—p. 1902.
"Sacrococcygeal Invagination of the Skin." Hinterstoisser.—p. 1903.

Experiences with Pylorectomy as an Indirect Operation for Ulcer.—Madlener reported a year ago his favorable results in three cases of gastric ulcer, distant from the pylorus, through the removal of the pylorus and leaving the part of the stomach with the ulcer. He now reports on seven recent cases treated by this method. Three cases concern large ulcers of the middle of the stomach, penetrating into the pancreas, together with extensive perigastritis and weakness precluding a large resection. Four cases concern ulcers near the cardia, one of which was the size of a walnut and penetrating, while the other three were ulcerous tumors the size of a plum and without adhesions. In the last four cases the patients could have withstood resection of the ulcer. Besides the pylorus, a portion of the antrum from 2 to 4 inches wide was removed. Union of the stomach with the duodenal stump was after the Billroth I method. The patients ranged from 38 to 59 years of age. The immediate effect of pylorectomy was good in all cases. All pain had ceased before they left the hospital. While the patients are well, in the main, they are pale and lack vitality.

Zentralblatt für Gynäkologie, Leipzig

48: 1945-1992 (Sept. 6) 1924

Intraperitoneal Saline Infusion in Obstetrics and Gynecology. T. Heynemann.—p. 1946.
Technic for Insufflation of Tubes. B. Ottow.—p. 1961.
*Menstruation and the Skin. A. Hirschberg.—p. 1966.
Pregnancy in Hypoplastic Uterus. T. Micholitsch.—p. 1967.
*Purulent Foci and Radium Therapy. I. Belugin.—p. 1970.
An Operation for Prolapse of Uterus. H. Thomson.—p. 1976.
Induced Abortion from Standpoint of Ethics. S. Galant.—p. 1978.
Diathermy in Gynecology. I. v. Büben.—p. 1980.

Suggillation of Menstrual Origin.—Hirschberg observed a case in which ecchymoses regularly occurred on both thighs eight or ten days before the menses. The ecchymoses were the size of the palm of a hand, and were neither painful nor tender. The phenomenon may be explained by a higher permeability of the vessels, due to menstrual irritation, associated with some deficiency of the endocrine glands.

Purulent Foci and Radium Therapy.—Belugin states that out of 22 fatal cases of carcinoma of the uterus, treated with radium, in 16 instances death was due to peritonitis, or to general septicemia. Necropsy showed in over a half of the cases destruction of the capsule of a purulent focus, localized in the small pelvis, the destruction being due to the chemical and biologic action of the irradiations. In such cases the radiotherapy should be preceded by autoimmunization.

Zentralblatt für innere Medizin, Leipzig

45: 721-744 (Sept. 6) 1924

*Multiple Myelomas. B. Aschner.—p. 722.

Multiple Myelomas.—Aschner reports on an atypical case of multiple myelomas. The diagnosis was made because of pains in the bones and blood changes indicating destruction and irritation of the bone-marrow. Bence-Jones' protein did not dissolve on boiling in the first tests, but gave the typical reaction later.

Norsk Magazin for Lægevidenskaben, Christiania

85: 633-704 (Aug.) 1924

*Diastase Content of the Urine. A. J. A. Arnesen.—p. 933.
*Metastatic Paranephritic Abscess. L. Nieuwejaar.—p. 647.
*The Genius Epidemicus. VII. A. Magelssen.—p. 655.
Osteotomy of Heel-Bone; Two Cases. Nicolaysen.—p. 664.
General Anesthesia with Acetylene Gas. T. Brandt.—p. 669.

Diastase in the Urine During Passage of Gallstone.—Arnesen's research has apparently demonstrated that 32 units of diastase are often found in the urine but 64 units are suspicious of pathologic conditions, and 128 units confirm the diagnosis. In one woman, aged 75, with gallstone colic and transient fever the average had been 8 to 16 units, but then suddenly the diastase content rose to 1,024 on two successive days, dropping back to 8 the next day, as a gallstone was voided. In a second similar case, the diastase units ran up transiently to 2,048 but no gallstone was discovered in the stools. In a case of an abscess in the pancreas, perforating into the stomach, the diastase figure was 1,024 just before perforation occurred.

Metastatic Paranephritic Abscess.—Nieuwejaar's surgical treatment was followed by recovery in the six cases he describes. The primary focus was manifest in two of them, a furuncle on the face or abscess on the foot. In the seventy-four cases he has compiled from the records, there were only two deaths. As trauma is so often a predisposing factor, the preponderance of men in the statistics is not surprising.

Genius Epidemicus.—In this seventh communication on means to ascertain the genius epidemicus, Magelssen discusses the laws regulating the relations between tuberculosis and the temperature of the environment.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

2: 979-1094 (Aug. 23) 1924

The Sturkop Case. H. Burger.—p. 980.
*Is Chlorophyl Utilized by Animal Organism? M. J. Roessingh.—p. 987.
*Pathologic Foci of Glia Tissue. L. Bouman.—p. 1001.
Acute Appendicitis in Pregnancy and Childbed. Hermans.—p. 1004.
Enlargement of Lymph Glands with Mammary Cancer. Van Walsem.—p. 1018.
*The Dangers of Lumbar Puncture. W. H. J. Ivens.—p. 1021.
A Partially Dead Fetus. B. J. de Haan.—p. 1027.

Is Chlorophyl Utilized by Animal Organism?—The experimental research reported by Roessingh demonstrated that chlorophyl has no influence on the production of hemoglobin beyond that of the iron which it happens to contain.

Foci of Glia in Tetanus and Paralytic Dementia.—Bouman remarks that these foci are generally found around a capillary, and their occurrence in tetanus and their resemblance to Lotmar's findings in dysentery suggest that they are referable to the action of toxins rather than to direct microbian action. In two recent cases of tetanus, the one with a chronic course did not show these glia foci, while they were numerous in the brain, especially in the medulla oblongata, in the other, a boy aged 6. He had died in less than a week after the onset of tetanus, about a week after injury of two fingers. Tigrolysis was pronounced. Similar foci of glia were found in some paralytic dementia brains; sixteen photomicrographs show the special features.

The Dangers with Lumbar Puncture.—Ivens does not refer to the danger from sudden changes in the pressure in case of tumor or hemorrhage in the brain or spine. In 1916 Schönbeck compiled seventy-one instances of death after lumbar puncture from these or similar causes. In the case reported by Ivens, purulent meningitis developed after lumbar puncture in a tuberculous infant. Necropsy confirmed that the pneumococcus purulent process in the cerebral meninges had developed independently of the preexisting tuberculous meningitis. The blood had not been examined before the puncture, so it is not known whether pneumococci in the blood had been aspirated into the cerebrospinal fluid by the negative pressure after the lumbar puncture, or whether the pneumococci had been introduced with the needle. Kolle and Faber have each reported a similar case of superposed purulent meningitis with tuberculous meningitis.